A FRAMEWORK FOR EXAMINING USAID INVOLVEMENT IN INFRASTRUCTURE

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FINAL REPORT

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I. INTRODUCTION

A. Principal Focus

Infrastructure development is essential to achieving USAID's broad social and economic development goals. With declining budgets, USAID has a limited financial ability to invest directly in alleviating the major infrastructure bottlenecks constraining developing economies, especially relative to the scale of capital resources required. Over the past decade, however, increasing opportunities have emerged for leveraging private sector capital for investment in infrastructure. The central question of this "working paper" and exercise is how the Agency can continue to play a critical, and cost-effective, role in improving the availability and quality of infrastructure services.

Achievement of most of USAID's goals requires significant improvement and expansion of infrastructure services. For example:

- Goal #1: "Achieving broad-based economic growth" requires that the availability, quality and cost of infrastructure services enable competitive production and access to markets.
- Goal #3: "Stabilizing the world's population and protecting human health" requires, at a minimum, access to safe water and sanitation.
- Goal #4: "Managing environment for long-term sustainability" involves environmentally sustainable infrastructure, a difficult concept to implement in developing and transition economies.

Estimates of the investment required to provide infrastructure services for both meeting basic human needs (e.g. water, sanitation, electricity) and improving economic competitiveness (e.g. transport, telecommunications), are daunting, and impossible to satisfy with USAID resources alone. The World Bank and regional development banks have greater financial resources, but even these are very modest in relation to the needs. Furthermore, significant amounts of resources are wasted through poor selection, design, management and maintenance of infrastructure, as well as the lack of incentives to encourage greater efficiency and improved service quality.

Over the past 15 years, conventional views of infrastructure services as being "natural monopolies" and "lumpy investments" requiring government control and financing, have increasingly been challenged. Pioneering liberalization and privatization initiatives, together with technological developments, especially in the United Kingdom and the Untied States, have resulted in dramatically increased levels of private capital and management, as well as competition.

The underlying hypothesis in this paper is that leveraging significantly greater levels of capital investment in infrastructure, while improving access, quality and cost of services, is a strategic and cost-effective role for USAID. The questions are how far the paradigm of competition and private investment can be carried and what USAID's role is in moving the process forward.

B. Objective, Scope And Approach

The objective of the current exercise is to determine how USAID can best impact infrastructure development. This is being accomplished through the analysis of a number of illustrative cases of recent or ongoing USAID experiences, followed by a series of workshops to further define lessons learned and implications for future USAID initiatives.

The Economic Growth and Agricultural Development office (EGAD) in USAID's Global Bureau, retained CARANA Corporation under a SEGIR-Privatization Task Order to prepare the case studies and coordinate the workshops. The principal focus of the case studies was to assess the impact and effectiveness of USAID initiatives to reform selected infrastructure sectors, and especially policy and regulatory frameworks. The information for each case study was based on interviews (with USAID, operators, regulators, users, investors) and information gathering during one week field trips, as well as follow-up interviews and data-gathering.

The project began by looking at telecommunications and electricity in Central America (El Salvador, Guatemala, Nicaragua and Costa Rica). The program was broadened as other regional bureaus and Missions indicated interest in having specific infrastructure projects included. Efforts were made to ensure broad geographic coverage, different types of infrastructure and diverse types of USAID interventions. The final case studies include:

- **Power:** Guatemala, El Salvador, Nicaragua, Philippines, Egypt
- **Telecom:** Guatemala, El Salvador, Costa Rica, Philippines, Egypt, Mauritius
- **Railroads:** Malawi
- **Municipal Water:** Ukraine

The following report is intended as a "working paper" to help facilitate internal USAID workshops and discussions regarding lessons learned and implications for future strategies and initiatives. A workshop is planned for Washington. Depending on the results of this first workshop, additional ones may be held either in Washington, or in the field. A "virtual conferencing" capability for facilitating dialogue through the Internet, is also being organized.

The final report will incorporate the results and inputs from the workshops and "virtual conference."

C. Report Structure And Expected Results

This report is structured in five sections, designed primarily to facilitate discussions and help formulate follow-up strategies.

- Section I provides the introduction to the study.

- Section II establishes the conceptual framework for thinking about infrastructure in the broader context of economic development. It covers:
  - Indicators of the level of need for, and impact of, improved and expanded infrastructure;
  - Principal factors constraining the necessary expansion and qualitative improvement in infrastructure services;
  - Options for reform and restructuring of infrastructure sectors.

- Section III summarizes the evolution of USAID involvement in infrastructure, and contains:
  - A brief review of USAID's overall involvement in infrastructure over the past several decades;
  - A brief review of USAID's current involvement, as seen in the case studies.

- Section IV provides individual summaries for each of the thirteen case studies, looking at the role played by USAID and other donor organizations, results achieved, and lessons learned. The case study summaries are intended to stimulate thought. The complete case studies are attached as appendices to the report.

- Section V outlines the lessons learned from recent USAID experience as illustrated in the case studies. The section draws out a framework for thinking through USAID assistance models.

  The lessons learned currently reflect the analysis and opinions of CARANA Corporation, but will be modified after the workshops to fully incorporate inputs provided by USAID and USAID partner participants.

The Global Bureau expects that the final output will be a final version of this report which includes input from the workshop series. The report and workshop discussions are expected to assist USAID missions in thinking through approaches to incorporating infrastructure related activities into their strategies and programs.

D. Definition Of Infrastructure For This Report

For this exercise, infrastructure has been defined as "economic infrastructure: the long lived engineered structures, equipment, and facilities, and the services they provide that are used in economic production and by households."[1] Economic infrastructure includes:

- Public utilities: power, piped gas, telecommunications, water supply and distribution, sanitation and sewerage, solid waste collection and disposal;
- Public works: major dam and canal works for irrigation, and roads;
- Transportation: ports and waterways, airports, railroads, and urban transport.

Infrastructure is often referred to as "social overhead capital", generally meaning large investments for the common good. Social infrastructure (such as health care systems, education systems) is not included in this assignment.

[1] The World Bank , World Development Report, 1994.

II. INFRASTRUCTURE IN DEVELOPING AND TRANSITION ECONOMIES

A. Impact of Improved/Ignored Infrastructure on Economy and Population

Although the precise link between infrastructure and economic growth has long been debated by economists, the social and economic importance of infrastructure is evident. The following data give a brief overview of the role of infrastructure in the economy and society.

1. Impact Of Improved Infrastructure On Competitiveness And Growth

Economic growth, the creation of new jobs and the improvement of living standards require investment in productive activities. Stimulating sufficient levels of domestic and foreign investment is a function of the policy framework and international competitiveness. Infrastructure is an important factor in shaping competitiveness and thus the opportunities for investment and growth.

Although a clear correlation between investment in infrastructure and economic growth has not been established, the World Bank suggests that for all countries, a one percent increase in the stock of infrastructure is associated with a one percent increase in GDP.[2] Not only does investment in, and operation of infrastructure represent an important source of economic activity and employment, but it facilitates and stimulates other private investment. The importance of quality infrastructure is actually increasing with globalization, changing technology, and decreasing costs of raw materials. Some illustrative examples include:

- Investment in, and operation of, infrastructure services already account for an average of 10-12% of GDP in developing countries. However, some countries or regions have focused on infrastructure based activities as primary growth and export sectors. Examples include: tapping of hydroelectric potential for export in Paraguay and Nepal; transport and transshipment hubs in Panama, Singapore, and Hong Kong; "teleports" and "export" of telecom value-added services in the Netherlands, Antilles, and Jamaica; and industrial parks offering integrated assembly services throughout the Caribbean Basin.

- The "basis of competition" for specific goods and services is changing qualitatively. For example, location of offshore apparel manufacturing used to be largely determined by wage rates and quotas. Now, location is increasingly determined by ability to respond to sudden changes in market requirements, rapid turnaround times, and reliability in timely delivery. Thus the quality of transport and telecommunications infrastructure becomes increasingly important.

[2] The World Bank , World Development Report, 1994.

- The fact that many developing countries are reduced to competing with the U.S. and Europe on the basis of "cheap" labor, can, in part, be blamed on poor infrastructure in these countries. High cost, inefficient infrastructure services are compensated by lower wages. Furthermore, poor quality electricity, water, and transport services negatively affect labor productivity.

- Producers of agricultural commodities have been suffering adverse price pressures as the commodity value in the total value of final products is decreasing sharply. Prices to farmers are reduced even further by poor roads, storage and transport, thus depressing rural incomes and even the viability of producing for the market.

2. Impact Of Ignoring Infrastructure Development On Quality Of Life

Failing to make improvements to infrastructure has seriously negative impacts on quality of life, as illustrated by the following examples:

- It is estimated that more than one billion people lack access to clean water and more than two billion people do not have adequate sanitation. The resulting health and mortality problems impact both quality of life and economic productivity and growth. In fact, roughly 80% of the world's illnesses have been attributed to poor water supply and sanitation. Furthermore, the cost of obtaining clean water represents a high burden in time (especially for women) and/or money.

- Rural populations have particularly limited access to basic infrastructure services: about 65% of the inhabitants in rural areas still have no electricity, while about 33% lack potable water. Poor roads and access to markets limits opportunities and incomes of the rural poor.

- Urban populations are growing more rapidly than their infrastructure can sustain, resulting in environmental and economic problems. In addition, creation of employment opportunities for the estimated 96 million young people entering the labor force each year is a daunting challenge, but virtually impossible to achieve in regions without competitive infrastructure. These problems increasingly impede economic growth and negatively impact the quality of life.

- Current rates of population and urban growth imply very high baseline infrastructure requirements just to maintain living standards. Increasing economic growth rates and employment, and improving living standards, will require significantly more and better infrastructure.

3. Baseline Demand

The following table shows an enormous gap in the access to basic infrastructure services between the poorer and richer regions of the world. On the assumption that all people aspire to a quality of life closer to that of the "rich" world, these indicators provide one measure of the need for additional infrastructure.

Indicators of access to infrastructure services

Indicator	Low Income Countries	Low-middle Income	Upper Middle Income	High Income
Kilowatt hrs/capita (1996) (consumption)	269	991	1962	7748
Telephone lines/000 pop. (1996)	11	62	140	540
Mobile phones (1996)	0	5	19	131
Paved roads (km. Per MM persons, 1990)	396	1,335	NA	10,106
Access to safe water (% of population, 1995)	71	84	NA	NA
Access to sanitation (% of population, 1995)	30	31	41	NA
Population, millions (1997)	2,048	2,285	571	926

Sources: The World Bank "Economic Development Indicators", 1998-99 and "World Development Report", 1994

The greatest need for improvement in infrastructure services is in countries that account for most of the world's population; since the population growth rate in these countries is particularly fast, the implication is that infrastructure services will have to be expanded at an even faster rate.

While the level of investment in infrastructure by developing and transition economies has been significant, the rate of expansion needs to increase in order to meet demand. The World Bank estimates that developing countries invest about $200 billion per year in new infrastructure, which represents about 4% of GDP (and ranges from 2-8%).[3] This level of investment has led to expansion of coverage in low and middle income countries at a rate faster than population growth. The table below captures this expansion in coverage.

[3] The World Bank estimates that infrastructure accounts for about 20-22% of total investment for poor and middle income countries and between 40-60% of public investment, respectively.

Annual average percent increase in coverage (1975-1990)

	Low Income Countries	Middle Income Countries
Power generating capacity (kw/000 people)	1.6	4.7
Telephone lines per 100 people	3.2	5.6
Sanitation, % population with access	3.8	2.7
Water, % population with access	2.7	2.0
Paved roads, kilometers per million people	1.6	0.9

Source: World Bank, "World Development Report, 1994"

Although the improvement in basic service coverage is noteworthy, the rate of expansion and improvement needs to be accelerated to meet basic human needs as well as improve competitiveness. It is estimated that to support a rapidly growing economy, investments in infrastructure equivalent to about 7% of GDP are required. This amounts to global investment requirements of over $400 billion per year.

B. Constraints to Improving the Supply and Quality of Infrastructure

Constraints to improving infrastructure vary across sector and region. However, there are a number of themes common to all infrastructure types and regions. These themes are explored below.

1. Understanding Of Infrastructure As A Public Or Private Good

The first and foremost constraint to reform stems from the way infrastructure is defined as a public or private good.[4] Many other major constraints stem from how infrastructure is perceived. As will be described below, the debate has evolved significantly over the past 15-20 years.

Most infrastructure services have long been assumed to be "natural" monopolies, which together with the size of the investments required, have implied the need for tight government ownership and control. State owned monopolies have had no incentive to improve quality and efficiency, lower prices or introduce new technologies. By definition, they have excluded private ownership and management, and certainly outside competition.

The concept of natural monopolies is based on the extraordinarily high initial ("lumpy") investment in fixed assets (pipes, dams, roads, cabling, ports, etc.). The assumption has been that it would be an economically inefficient use of resources to duplicate such

[4] A "public good" is defined as a good that cannot be withheld from people even if they do not pay for the good; a "private good" is defined as a good exclusively owned that cannot be simultaneously used by others. Most goods fall somewhere between these two extremes.

investments in the interest of competition. Therefore, monopolies would be allowed, but tightly regulated, or more commonly since the 1930s, the state would directly own the infrastructure.[5] State control and operation was also justified on the basis of social equity: it was argued that private operators would not invest sufficiently in providing services to rural and underdeveloped regions, and to the poorer strata of society.

In most developing countries, policies, regulation *and* operation of each type of infrastructure have been the responsibility of one ministry or organization. Policies and regulations have failed to create incentives for improved performance and efficiency, and have naturally been biased in favor of the operators and their employees, rather than the consumer.

Infrastructure monopolies have tended to be vertically and/or horizontally integrated. Integration is considered vertical when all of the different functions related to a type of infrastructure are integrated into one organization (e.g. generation, transmission and distribution of electricity). Integration is considered horizontal when all the facilities in a country or region, providing a certain type of infrastructure service, are organized into one structure (e.g. all the regional electric power utilities). These integrated structures have been defended on the basis of providing economies of scale (e.g. for raising capital) and better coordination in the delivery of services. In practice, these structures have created huge, monolithic, capital intensive organizations run in a top-down fashion from the capital cities, while discouraging local initiatives and innovation.

Many government utilities have been successful in significantly broadening access to basic services. However, the level of investment has been limited by public sector financing constraints. In addition, it appears that significant resources have been wasted on poorly conceived and managed projects. Thus the assumptions that monopolies and public sector control are necessary in infrastructure are increasingly being challenged, especially given changes in technology and new approaches facilitating competition and private sector involvement. The debate in developing countries has also been significantly influenced by deregulation and privatization in the U.S. and U.K., most notably telecommunications and transport service deregulation in the U.S., and privatization and liberalization of most infrastructure in the U.K.

One of the main factors contributing to the change in approach towards infrastructure ownership and operations is the advent of new technology. New technology has not only allowed for improved quality and expanded service, but in many cases it has reduced the costs of entry into the market, increased the possibility for substitutes, and allowed for unbundling of ownership and operations, as well as unbundling of services.

[5] Interestingly, before the 1930s, most infrastructure worldwide was privately developed and financed.

The table below provides a few examples of the impact of technology change on infrastructure, and suggests the potential for change in industry structure.

Impact of Technology Change on Organization of Infrastructure Development and Operations

Sector	Technological Change	Impact
Telecom	New technology in long distance transmission (satellite, fiber optic cabling)	Competition, lower costs, broader access
	New transmission technologies in local exchange service (cable-based telephone access, cellular radio, direct microwave)	Competition, lower costs, broader access
	Value added services and convergence with computers	Information "revolution"
Power	Co-generation, small scale generation (gas turbines, solar)	Options for unbundling, "commoditization" of power
	New organizational concepts	Options for unbundling
Sanitation	Intermediate sanitation technologies with lower construction costs	Permits low-cost supply options
Sanitation	Change in design parameters for conventional sewage	Permits low-cost supply options (ex: condominial sewage)
	Remote monitoring (ex: use of cameras in pipelines)	Facilitates unbundling of assets and operations: allows owner or regulator to monitor conditions of assets; Allows identification and problem diagnosis without disruption in service (excavation, dismantling)
Transportation Services	Introduction and use of containers	Allows rapid and cost-effective transfer of freight across multiple transport modes
	Electronic communication systems	Improved trade logistics and speed, reduced transport costs
Road Transport	Electronic road pricing	Increases options for demand management (ex: allows differentiation of charges, management of congestion, internalization of costs of pollution)
	Improved metering and billing technology	Equitable pricing, revenue collection

In developed countries, infrastructure has been increasingly viewed in multiple segments, allowing for different ownership and management structures. For example, in the case of railways, it is now possible to think of the rail bed, the rail cars, passenger service, freight service, sleeper and catering services as separate activities that can be owned and operated by separate entities. This separation of operational activities allows for more flexible ownership structures, more flexible financing options, and more competitive service.

Therefore, before designing new institutional arrangements, it is important to first determine to what extent government involvement is necessary. The World Bank identifies four criteria for developing a rationale for the degree of private versus public sector involvement in infrastructure:

- Nature of the good or service: Is the good public or private? In other words, to what extent do people have a basic "right" to access the services? Where does the good fall along the spectrum between the extremes of purely private and purely public?
- Conditions of production: Are there barriers to entry due to high sunk costs? Does efficiency require a high degree of technical coordination?
- Externalities and social objectives: Are there costs/benefits, such as pollution or increased communication possibilities, to people other than those directly involved?
- Characteristics of user demand: Are there substitutes for specific services? Is there ready access to these substitutes? Is demand price-elastic?

These criteria encompass issues that can contribute to market failure and might thus require government intervention. A few examples, outlined in the table below, illustrate how specific activities within an infrastructure sector can demand different levels of public involvement. The table covers only the infrastructure types covered in the case studies. It covers factors used to determine whether or not specific divisions or activities within a sector are natural monopolies and would thus require government intervention. These factors include:

- "Economies of Scale," and "Sunk Costs:" these factors can make the argument for a natural monopoly;
- "Coordination Requirements:" in instances where a high level of interaction among operations is required, this factor can make the argument for an integrated structure, and/or regulation;
- "Subtractability" and "Excludability:" these factors can make the argument for government intervention/regulation. Subtractability means the extent to which a good can be consumed by only one person at a time (purely private good, said to be highly subtractable), or by multiple parties (public good, which has low subtractability). Excludability captures the extent to which individual consumers can be excluded from consuming a good.

	Aspects of Production			Nature of Good/Service	
Infrastructure Type	**Economies of Scale**	**Sunk Costs**	**Coordination Requirements**	**Subtractability**	**Excludability**
Telecom					
Basic Network (Long Distance Transmission; Switching;	Low	Low	High	Medium	High
Terminal Equipment)	Low	Low	Medium	Medium	High
Network Extensions (Value-Added Services; Cellular; Paging; Microwave Relay; Private or Specialized Networks)	Low	Low	High	High	High
Terminal Equipment (Common)		Medium		Medium	
Network: Transmission—local		High			
Electric Power					
Generation	Medium	Medium	High	High	High
Distribution	Medium	Medium	High	High	High
Transmission	High	Medium	High	High	High
Railways					
Switching and signaling;	Low	Low	High	Medium	Medium
Rail cars	Low	Low	High	High	High
Freight loading/unloading	Low	Medium	Medium	High	High
Railbed	Medium	High	High	Medium	High

	Aspects of Production			Nature of Good/Service	
Infrastructure Type	**Economies of Scale**	**Sunk Costs**	**Coordination Requirements**	**Subtractability**	**Excludability**
Wastewater					
Wastewater Management (Conventional Street Sewer, Pumping Station; Treatment Plant)	Medium	High	Low	Low	High
Wastewater Management (Intermediate Cost Sewage—Condominial Sewage;)	Low	Medium	High	Medium	Medium
Low Cost Sewage Localized Treatment; Pit Latrine	Low	Low	Low	Medium	High
Water					
Nonpiped Water Supply (Vendor Tanks, Borehole)	Low	Low	Low	High	High
Piped Water Supply Terminal Equipment—Common (handpump) Individual (home faucet); Trunk System(Intake Pumping Station); Distribution System	Low High	Low High	Low High	High High	High High

Source: This table is based on a compilation of tables from the World Bank Discussion Paper #212, "Institutional Options for the Provision of Infrastructure." The World Bank, Washington, DC 1995

The differences within the sectors underscore the need to break down infrastructure into separate components in order to develop a more flexible and efficient approach to reforms. The railways provides a neat example of how some aspects, such as the railbed require high initial investment (sunk costs), while others such as switching and signaling do not. Freight loading/unloading is highly subtractable while the railbed subtractability is considered to be medium. The advantage of unbundling the sectors is that it allows for more efficient management, ownership, and regulation.

The above table takes into account opportunities for market failure. It is also important to address the possibilities for government failure. Government failure can occur when there are conflicting policy objectives, misinterpretation of public interest, or conflicting objectives between interest groups. The World Bank advocates government intervention in cases where the "potential costs of market failure are greater than those of government failure."

Once the rationale for private and/or public involvement has been developed, the appropriate institutional arrangements can be developed. Where there are high sunk costs there is the possibility for public planning, financing and ownership. High sunk costs can also be addressed through private ownership, or private management (lease, concession) combined with public regulation. High coordination requirements can be addressed through regulation of investment or operating standards. High subtractability can be addressed through tariff regulation. Efficiency can be greatly enhanced by treating the various components differently.

Lack of separation (unbundling) of the various infrastructure components is a real constraint in infrastructure reform in many developing countries. These countries still tend to see infrastructure as natural monopolies with an ensuing need for public involvement. The experience of pioneering developed and developing countries can be useful in helping to change this perception. Only with a clearly defined understanding of the need for government involvement can countries set their policy agendas, develop rational financing and private investment options.

2. Policy Framework

Resolution of the debate on the implications of infrastructure assets and services as private versus public goods will help bring clarity to the policy making process. The policy framework is critical for creating the conditions for successful implementation of structural and institutional arrangements. Issues that need to be addressed include: competition, participation, regulation, pricing and financing, and planning.

As countries have moved to facilitate greater privatization, competition and decentralization, one of the concerns slowing down the process has been the lack of an adequate policy framework and regulatory capability. This has been an obstacle at multiple levels, including those outlined below.

Unbundling
Countries must choose among a wide range of options on whether, how and when to "unbundle" monopolies. Some countries have chosen to privatize monopolies intact, at least for a period of

time, in return for more attractive sale/concession terms and promises of investment by the private investor. Unbundling of vertical monopolies involves "segmentation" of different functions/activities, and the separate "corporatization," sale/concession and/or decision regarding new competitors for each one. Unbundling of horizontal monopolies involves segmentation of each regional/municipal unit and decisions regarding corporatization, sale/concession, competition and regulation for each unit.

Privatization
Privatization also involves decisions on whether and on what terms to sell infrastructure assets (partially or entirely) or enter into some type of concession agreement for management of existing infrastructure (with the assets still owned by the state). For new projects, the decision is whether and on what terms to facilitate private financing and/or management with options such as build-operate-transfer (BOT), build-operate-own (BOO), etc.

Competition
If competition is to be encouraged, detailed regulation (and enforcement) is required to ensure a "level playing field", with access and access costs to key infrastructure assets (e.g. distribution systems) being particularly crucial. With monopolies or limited competition, regulation is needed to ensure that rates are fair to both investors and consumers and that operators are living up to the terms of their contracts. When substitution is possible, this also needs to be considered.

Decentralization
When decentralization of responsibility for infrastructure (as in the case of water, sanitation, roads) is desired, and deemed beneficial, the responsibilities of local versus central governments and regulatory organizations must be clearly defined.

Transparent Legal Environment
Private and/or foreign investors are always most concerned about having clear "rules of the game," both for specific types of infrastructure service, as well as for investment in general. The latter range from protection from expropriation to repatriation of dividends and foreign exchange controls.

Regional and International Cooperation
Since infrastructure does not always neatly stay within borders (and/or can be improved through international cooperation), international agreements and their implementation are required. For example, railroads and highways that facilitate trade among countries, ports shared by multiple economies, and multi-country power pooling or trade

As countries move towards new approaches to infrastructure development, the policy and regulatory framework is very complex. Not only do countries have to get the policies and regulations right, but they need the capability for implementation and enforcement. The lack of technical capability has been a significant obstacle.

3. Financing

In the late 1980s and early 1990s, about 90% of financing for infrastructure was derived from government tax revenues or borrowing. Multilateral and bilateral donors accounted for about 12% (much of it loans or grants to governments) and the private sector about 7%. However, the ability of governments to continue financing infrastructure at even historic levels is highly questionable.

High budget deficits, external debts and debt service obligations, limit the ability of governments to continue financing infrastructure. In addition to investing about half of their capital budgets in infrastructure, operating and maintenance budgets are significant components of current expenditures, which when cut, adversely affect the quality of the infrastructure services provided. Of the principal infrastructure services, only telecommunications recover costs through fees. On average, the costs of sanitation, electricity and transportation infrastructure costs exceed income. Many developing countries have been forced by necessity to adopt economic austerity programs.

Low savings rates also constrain financing of infrastructure. Gross domestic savings in low/middle income countries averaged 26% of GDP in 1997. However, compared to 36% levels in East Asia and 26% in the Middle East/North Africa, other developing and transition regions experienced savings rates of 18-21% of relatively small economies.

Donors have sought to fill the financing gap. Donor financing increased steadily from the early 1980s, reaching about $25 billion per year in the mid-1990's (mostly to energy & transport). The share of donor financing as a percentage of external financing increased during the period to about 75%, while private (but government secured) loans decreased. Most donor financing of infrastructure is channeled to and/or through governments.

Developing countries have no choice but to increasingly seek private capital for investment in infrastructure. Furthermore, they need foreign investment (e.g. tapping savings in developed countries) to complement modest domestic savings and investment. Donor funds need to achieve greater leveraging of private and foreign capital.

4. Private Investment

Private participation in infrastructure financing is growing, but is still both a modest percentage of the total and highly concentrated in certain countries and sectors. Between 1990-95, private financing of about $150 billion was announced for 360 projects. By value, distribution was as follows:

Region	Percent
Africa	1
Asia	46
Middle East/N Africa	8
E Europe	5
Latin America	41

Sector	Percent
Gas	7
Power	38
Telecom	28
Transport	21
Waste/water	7

Source: IFC "Financing Private Infrastructure"

The bulk of international private infrastructure loans goes to a small number of countries: for example, in 1993, over 95% of the loans went to under a dozen countries (Argentina, Colombia, Hungary, India, Malaysia, Mexico, Pakistan, Philippines, Thailand, plus Indonesia and Turkey).

Much of the private investment in infrastructure has gone into privatizations, as opposed to new projects. For example, between 1990-94, $37.1 billion in 94 projects was announced in privatization projects in developing and transition economies. In 1998, infrastructure privatization revenues amounted to roughly $30 billion in about 15 countries.

Until fairly recently, infrastructure was almost entirely under the exclusive ownership and control of the public sector. Where governments have sold infrastructure assets and/or opened the door to private project financing, private capital has responded. Although privatization has occurred more broadly than private project finance, both can be considered to be relatively new and very incomplete trends.

5. Inefficiency In Infrastructure Utilization And Management

The challenge is not just one of mobilizing huge amounts of investment, but also one of minimizing waste and poor utilization of resources. Investments in infrastructure have been plagued by poor conceptualization and management, as well as inadequate attention to maintenance and ongoing operations. The consequence is that investments made to date have not been nearly as effective as expected, while leaving countries and infrastructure companies highly indebted and unable to make further investments. The following indicators illustrate some of the performance issues:

	Low income countries	Middle income countries	High income countries
Electricity system losses, %	15-22	14-17	6
Telecom faults/hundred lines	75	40	17
Unaccounted for water, %	35-40	37	13
Paved roads in poor condition, %	60	60	15
Locomotives unavailable, %	55	36	16

Source: Compiled from World Bank Country Indicators

Developing countries have also been plagued by poorly conceived and implemented projects. Examples abound of:

- Roads to nowhere;
- Industrial parks, ports and airports in remote locations that remain unutilized;
- Facilities that quickly deteriorate due to lack of maintenance;
- Projects that benefit few politically well-connected interests;
- Dams that silt up or irrigation projects that ruin the soil through salination.

Evidently, there have been serious problems in the processes for determining where and how to invest in infrastructure, as well as in the ongoing operation and care of these valuable assets. These problems are among the factors creating impetus for new approaches to infrastructure development and management, including privatization, decentralization and demonopolization.

C. Options For Reform/Restructuring In Infrastructure

There are a multitude of different reform activities that can be undertaken to improve efficiency, increase capacity, or improve social equity. The sequencing of activities will differ depending on the country, the foreign advisors, and the sector involved. There is no one set of activities that must be undertaken in order to affect change within an industry. However, from the case studies included in this report, it is clear that the legal and regulatory environment must be clearly defined in order for commercialization, liberalization, and privatization to proceed openly and successfully.

Reform activities can be grouped under three categories:

- Legal and Regulatory Environment;
- Commercialization;
- Divestiture/Privatization.

The following slide summarizes the "menu" of reform options in the three categories and points to potential outcomes. It should be noted that these outcomes in many cases are also tools to be implemented.

MENU OF OPTIONS FOR REFORM IN INFRASTRUCTURE

LEGAL AND REGUL. *Shift in Industry Structure*	**COMMERCIALIZATION** *Change in Firm Structure*	**PRIVATIZATION** *Change in Ownership*	**OTHER** *Cross Cutting Activities*
• Liberalization/ Competition Policy • Unbundling • Regulatory Reform • Legal Reform • Trade and Investment • Decentralization	• Corporatization • Commercialization	• Initial Public Offering • Build-Own-Operate • Build-Own Operate-Transfer • Build-Operate-Transfer • *Concession* • Management Contract • Lease Contract	• Public Education • Public Relations • Institutional Development • Bankruptcy, Liquidation • Capital Markets Devel't • Economy Wide Accounting Reform • Post-Privatization Restructuring • Demonstration Projects
Potential Outcomes • Open Access to Market • Interconnection • New Entrants • Independent Regul. Body • Tariff Rebalancing • Fresh Capital • Regional Hubbing • Institutional Development • Pilot Projects	*Potential Outcomes* • Enterprise Accounting Reform • Financial Analysis • Management Tools • Institutional Development	*Potential Outcomes* • Fresh Capital • New Management • Know-How • Technology • Increase in Physical Capacity	*Potential Outcomes* • Consensus on Reform • Increased Access to Capital

Each of the three reform activity categories is briefly discussed below.

1. Legal and Regulatory Environment

The legal and regulatory environment is a critical component affecting the industry structure, which in turn impacts firm level restructuring, privatization, foreign investment, and economy-wide change. The main reforms that take place under the category of legal and regulatory environment include the passage of laws that allow unbundling, privatization, and development of a regulatory agency. Transparent laws are critical to developing investor and operator confidence, and thus attracting players to the market. In all markets, whether there is competition or not, regulation is important in order to protect both operators and consumers.

Regulation is most effective when conducted by an independent body not subject to political or private interests. A regulatory agency can police interconnection in the case of telecoms, power grid access in the case of power, tariff rebalancing, pricing, and a variety of other issues affecting the rules of the game.

The legal environment is also important to setting the stage for regional/international cooperation. This cooperation is critical in the infrastructure sector, when countries often pool power, or pass through one another on rail lines to reach ports and markets.

In the case studies included in this project, countries have been more successful at unbundling, opening markets to competition, passing new laws, than they have been at building regulatory capacity.

2. Commercialization

Commercialization is the process whereby an enterprise, usually a state-owned monopoly, undertakes restructuring in order to behave in a profit-oriented fashion. The restructuring activities usually begin with corporatization, during which the enterprise is incorporated as an independent corporate entity. In many of the ENI countries, "corporatization" was seen as an end in and of itself (sometimes mistakenly equated with privatization), and no further action was deemed necessary. In these cases little change could be observed at the firm. In countries serious about reforming, commercialization entails a change in management structure, often attraction of new capital, and changes in accounting practices.

Depending on circumstances, commercialization can be more or less successful. As will be seen in the case of Mauritius Telecom, for example, MT has had a very successful commercialization phase, during which it has markedly increased profitability and at the same time has expanded services. MT has profited from restricted competition during the commercialization phase, and critics would surely note that were the telecom sector fully open to competitive forces, MT might have further expanded coverage and services and its profit margins might not be so high.

On the other hand, the Malawi Rail case provides an example of a case where commercialization was implemented with little real impact on the running of the railway. During the commercialization phase of Malawi Rail, the rail company was restructured into two entities, one

of which provided lake services, the other straight rail. At MR (1994) (rail service) extensive retrenchment was conducted and direct government subsidies were halted. MR (1994) has not become profitable and freight service has improved only marginally.

Both Mauritius Telecom and MR (1994) have undertaken commercialization as intermediate phases prior to privatization. In the case of MT, the commercialization has rendered the company more attractive to prospective investors. This is not necessarily the case with MR (1994).

3. Privatization

Privatization is the process whereby ownership of assets is transferred to private hands, or management of the assets is transferred for a limited period of time while ownership of the assets is maintained by the state. There are a number of different ways in which privatization can be effected in infrastructure sectors:

Divestiture: This can take place through a strategic sale where part or all of the shares of the company are sold to a Strategic Equity Partner (SEP). It can also take place through the capital markets via an Initial Public Offering (IPO), where shares are offered for sale. In many cases, an IPO will not include 100% of the enterprise shares. Share packets can be offered in waves or all at once. Most of the telecom companies included in the case studies have been privatized through IPOs. In many cases, a portion of the shares will be reserved for employees and managers.

Concession: In a concession, the government retains ownership of the productive assets, but concedes operation to a (usually) private firm. A concession implies a contractual right to operate a business. It does not transfer property rights to the operator. Concessions are often used in the case of railways where the state maintains ownership of the physical way, or radio frequencies, as well as in sectors such as mineral resources. There are multiple types of concession arrangements, including master concessions, wholesale concessions, subconcessions, and lines of business. The railway provides an example where multiple types of concessions could be used: a master concession for a firm to operate the railway (track operation and maintenance, freight and passenger services), subconcessions for firms to provide food and beverage services, workshops and other support activities. A wholesale concession awards the right to operate all core and non-core activities to one concessionaire who might in turn have the right to award subconcessions. Lines of business concessions are used when each individual activity operates under an individual concession.

In the case studies included in this project, Malawi Railways (1994) is in the process of being concessioned. In many of the telecom sector cases, concessions have been granted for bands and particular services.

Lease: A lease transfers a property right for a defined period of time to the lessee, and is combined with contractual rights. Lease contracts were common practice under the Gorbachev reforms in the late 1980s in the former Soviet Union.

Build-Own-Operate-Transfer (BOOT): BOOT is a scheme designed to attract private sector financing for major infrastructure projects. Under a BOOT agreement, the private sector may come in and build the facility in question, operate it for a specified number of years in order to recover the investment with profit, and then transfer the facility to a government agency or authority. The agency can then operate the facility or reconcession it to another entity.

BOOTS are frequently implemented in the power sector. Under such an agreement, the operator might be given the exclusive right to supply power within a defined market, or to add power to a grid at a specific access point in order to supply specific customers. Operators often conclude power purchase agreements at the same time that they set up the BOOT contract.

A variety of BOOT schemes exist, including:

- BOO: Build-Own-Operate;
- BOT: Build-Operate-Transfer;
- ROO: Refurbish-Own-Operate;
- ROT: Refurbish-Operate-Transfer.

In the case studies included in this project, BOT schemes have been implemented, for the most part, in the power sector only.

III. EVOLUTION OF USAID INVOLVEMENT IN INFRASTRUCTURE DEVELOPMENT

A. History Of USAID Involvement

USAID has always understood the crucial role that infrastructure plays in economic development. However, its strategies and approaches have changed over the years. This section briefly reviews the nature of past USAID involvement in infrastructure activities.

In the 1960s USAID was heavily involved in directly financing capital projects and technical assistance for infrastructure and industry. This approach was based on the development theory that investment in infrastructure would trigger sustained economic growth. In the early 1960s capital project assistance in infrastructure and industry accounted for roughly 25% of U.S. bilateral official development assistance.

In the 1970s USAID moved away from infrastructure projects, recognizing that developing countries with weak institutions, inadequate policy environments, and low human resource capacity could not absorb capital transfers effectively. Capital projects were not going far in alleviating poverty. USAID shifted focus towards smaller-scale projects in nutrition, health, and education that addressed basic human needs. In 1972, capital project assistance in infrastructure and industry had decreased to roughly 11% of U.S. development assistance.

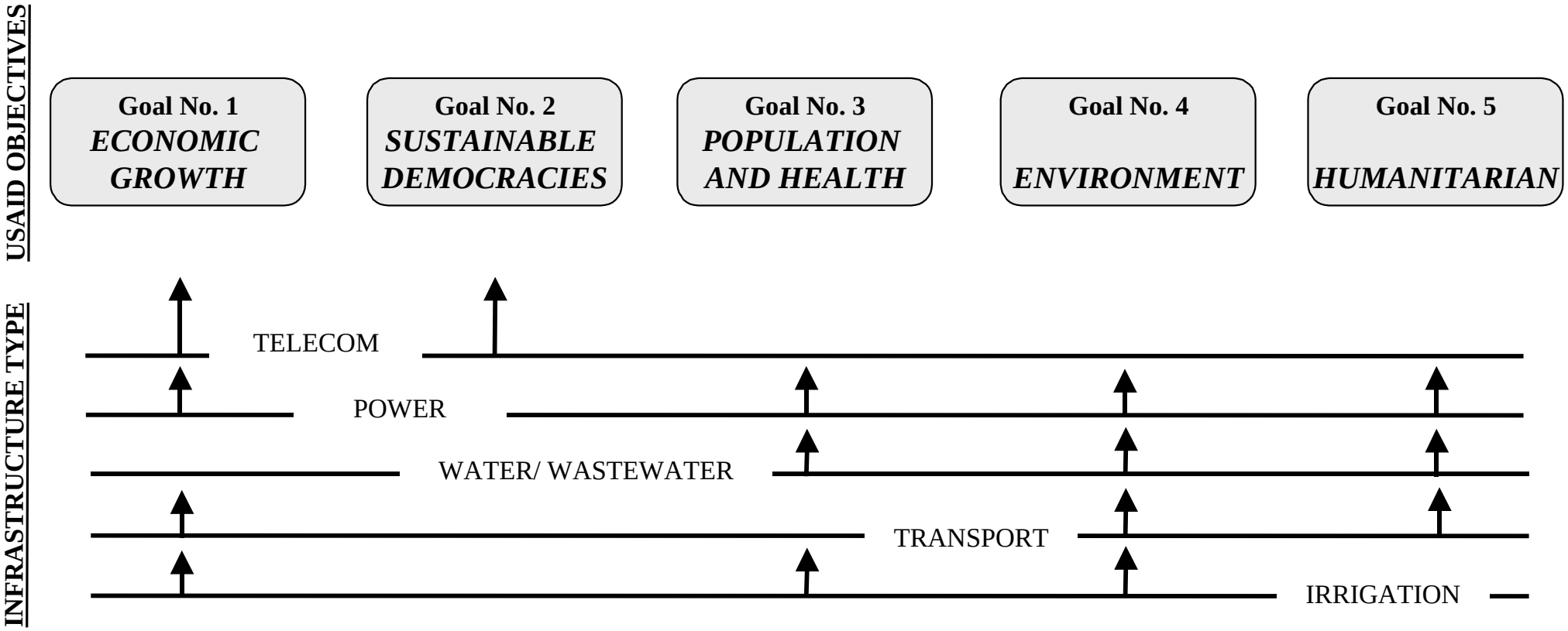
In 1981, USAID introduced the "four pillars" of economic development: 1) private sector development; 2) policy dialogue; 3) institution building; 4) technology transfer. Greater emphasis was given to institution building, policy dialogue, private sector development, and technology transfer with the aim of improving the use of available resources by developing countries. By 1982, capital project assistance in infrastructure and industry had fallen to 6.5% of U.S. development assistance. USAID allowed the World Bank and regional development banks to take the primary role in financing infrastructure, while USAID increasingly pioneered private sector development approaches. Concern with infrastructure bottlenecks to private investment, exports and farm-to-market storage and distribution led to innovative initiatives to promote private and/or public solutions. These initiatives included free zones, export processing zones, cold-storage, "teleports", community-based cooperative projects, and foreign investment promotion. At the same time, USAID continued to invest in infrastructure in special situations such as Egypt, and rebuilding the war damage to the electricity sector in El Salvador.

In 1990, USAID launched the Business and Development Partnership initiative with the aim of engaging "the American private sector in efforts to develop and sustain free-market principles and broad-based economic growth." One of the activities was to provide support for "sound capital projects of direct strategic relevance to U.S. trade competitiveness."

- In some countries, addressing infrastructure has been a high priority, such as in the Philippines and Egypt.
- In others, USAID has ended up dealing with infrastructure as part of other objectives/programs, or in response to specific host country requests, such as municipal water in Ukraine or power in Georgia.

Under current USAID goals and strategies, infrastructure development is not perceived as an end in itself, but rather is usually addressed as a means of addressing priority goals. Reflecting this perception, infrastructure is not noted as a direct objective in current agency-wide goals. However, attention to improvement and expansion of infrastructure plays a major role in achieving current USAID strategic goals, as graphically illustrated on the following page. This perception of infrastructure as a means to an end extends to missions, where, with the exception of water and wastewater in Egypt and Jordan, none of the USAID regional bureaus mention "economic infrastructure," as defined earlier in this report, as a primary strategic objective.

IMPACT OF INFRASTRUCTURE ON USAID OBJECTIVES



B. Current USAID Involvement As Seen In Case Studies

The case studies included in the following section of this report are illustrative examples of USAID involvement in infrastructure in the 1990s. They were selected with the aim of covering different types of infrastructure and diverse types of USAID interventions, as well as broad geographic coverage. Various types of infrastructure were selected to help understand the extent to which their requirements differ, and the extent to which USAID assistance has differed. Diverse geographic regions were chosen in order to see to what extent challenges faced were regional and to what extent they are common to infrastructure in general. Thirteen countries were included in the final case studies, covering four infrastructure sectors, and four geographic regions:

	LAC	ANE	AFRICA	ENI
Telecom	Guatemala, El Salvador, Costa Rica	Philippines, Egypt	Mauritius	
Power	Guatemala, El Salvador, Nicaragua	Philippines, Egypt		
Railroads			Malawi	
Water/Wastewater				Ukraine

Types of USAID intervention covered in these case studies include:

- Provision of technical assistance focused directly on the reform and restructuring of an infrastructure sector: for example, telecom and power reform in Central America.
- Provision of technical assistance to an infrastructure sector as a discrete activity in an otherwise unrelated USAID program. In a number of cases, USAID has been involved in infrastructure reform in an unanticipated way, addressing the issues that emerge in the course of implementing non-infrastructure oriented projects, as in the example of municipal water services in Ukraine.
- Linkages with financing mechanisms for procurement of U.S. technology and/or promotion of U.S. private sector investment, as in the example of Philippines telecom.
- Provision of non-project assistance (NPA) in the form of cash transfers, whereby money is transferred to the recipient country in tranches in accordance with fulfillment of conditionalities previously agreed to by both USAID and the recipient: for example, Malawi Railroad.
- Provision of commodity assistance: for example, Philippines Telecom.

IV. CASE STUDY SUMMARIES

The following case study summaries highlight the salient issues encountered. Each case study is summarized in terms of:

- *Background to Reform:* The context in which reforms were carried out, and the course of reform.
- *USAID Role:* USAID assistance, focus, and resources spent.
- *Role of Other Donors:* Which, if any, other donors were involved and how.
- *Private Sector Involvement:* How and to what extent the private sector became involved.
- *Results and Quantifiable Results:* Results achieved, both in terms of policy and measurable impact, such as reduced cost to the consumer, or increased provision of service.
- *Industry Structure Prior to and Post Reforms Implemented or Planned to Date:* The industry structure is illustrated in a chart focusing on ownership and competition issues. By showing the structure before and after reform, the slide indicates the reform path undertaken in terms of liberalization and privatization.
- *Lessons Learned:* Key lessons or issues, specifically related to catalysts for reform, sequencing, approach to reform process, and USAID and private sector roles.

The case study summaries are intended to stimulate thought, rather than to tell the complete reform story in each country. The complete case studies are attached in an appendix to the report.

Case study summaries are provided in the following order:

TELECOM SECTOR

Central America:	El Salvador, Guatemala, Costa Rica
Asia:	Philippines
Southern Africa:	Mauritius
Middle East:	Egypt

POWER SECTOR

Central America:	El Salvador, Guatemala, Nicaragua
Asia:	Philippines

RAIL SECTOR

Southern Africa:	Malawi

MUNICIPAL WATER SECTOR

Europe and Newly Independent States (ENI):	Ukraine

A. EL SALVADOR TELECOM

BACKGROUND TO REFORM:

El Salvador has been engaged in deep structural reforms and has been enjoying GDP growth rated as the third highest in Latin America in 1990s. Telecommunications has been one of the sectors addressed in the reform process. For the past three decades the state monopoly, Administración Nacional de Telecomunicaciones (ANTEL), was in charge of supplying all local and international phone call services, telex and data transmission, as well as managing and regulating private telecom services in El Salvador. A 1994 economic report by the USAID supported local think-tank FUSADES (Fundación Salvadoreña para el Desarrollo Económico y Social) noted that El Salvador lagged behind many other Latin American countries in terms of teledensity, with only 4.8 lines per 100 inhabitants in 1993. In contrast Chile had 11 lines per 100 people, Costa Rica 12, Panama 11 and Mexico 10. In the rural areas, telephone density dropped to 1.4 lines per 100 inhabitants. Low teledensity resulted in long waiting lists, and high congestion during peak hours. The sector was also characterized by cross subsidization with international calls subsidizing local service.

Following this report, discussion began on privatization of ANTEL, and development of a regulatory framework. Elimination of the cross-subsidy scheme was proposed with an eye towards making the Salvadorian telecom market more attractive to investors, thereby increasing access to phone service to low income and rural inhabitants, and increasing the country's international competitiveness.

El Salvador adopted a new telecom law in 1996 that established the legal and institutional framework for the sector. The legal framework breaks with the way other Latin American countries have been restructuring their telecom sectors, in that El Salvador opened the sector to new entrants, and it split ANTEL into two companies prior to privatization. This differed from the approach in several major Latin American countries (e.g. Mexico and Venezuela), in which the national telecommunications company was privatized as a temporary monopoly, in return for negotiated levels of investment. And, a strong and independent regulator, defined in the law as having little discretionary power, was established.[6] Close to one year later, in 1997, the Salvadoran authorities introduced some changes to the law, in order to guarantee some protection to both users and operators (new entrants), since the telecom market was not a competitive one at the moment of its liberalization. The main changes in the law were:

- Freezing the cost of local calls, access services and international rates in real terms (October 1997 as baseline) up to the year 2002. These rates are a maximum, so operators can charge whatever they want below the set figures.

[6] This approach contrasts with approaches taken in Argentina, Mexico, Peru, Panama, Venezuela, and more recently Nicaragua and Honduras.

- A council consisting of three members, including the regulator, a representative from the private sector and a representative from the Supreme Court. The rationale behind this setup is to resolve differences outside of court, rather than taking everything to the Supreme Court.

El Salvador's adhesion to the World Trade Organization Agreement on Telecommunications in 1997, also makes it the most advanced in Central America in terms of commitment to an open telecom market.

USAID ROLE:

USAID provided technical assistance in the form of education on alternatives to a state run system. Sharing international experience and different options available for restructuring the telecom sector proved critical in helping El Salvador to make an informed decision. USAID also provided technical assistance on privatization, competition, and deregulation, as well as TA to the National Assembly on passage of the telecom legislation. Assistance to the National Assembly was critical in preserving the liberal bill. Finally, USAID also provided TA for capacity building of the regulatory body (SIGET).

In addition to technical assistance, USAID used non-project assistance in the form of cash transfer programs accompanied by conditionality requirements for progress in development of legislation for privatization and deregulation. The assistance and conditionalities were apparently well received by the Salvadoran authorities who claim it assisted them in overcoming political opposition.

In total, USAID devoted about US$400,000 to TA for the reform process, excluding cash transfers.

ROLE OF OTHER DONORS:

The Interamerican Development Bank (IDB) and the World Bank were both involved in the preliminary stages of reform. The IDB sponsored the first complete analysis of the Salvadorian telecom sector in November 1993. At this time the Government's Modernization Office (which received funding from the World Bank) began pushing for free competition in the telecom sector, and ran into opposition from the World Bank which favored the more conventional route of privatization of the state telecom operator as a temporary monopoly, prior to liberalization.

PRIVATE SECTOR INVOLVEMENT

In 1994 some reforms were introduced, allowing private participation in the sector. In this way, ANTEL was allowed to hire local and/or international companies to design, install and implement expansion projects. In addition, ANTEL granted a cellular band (Telemóvil) and some value-added services (VAS) such as paging, trunking, data transmission, and cable TV to private companies.

Since the new law, the 900 MHz frequency was granted under concession to El Salvador Network, a new company providing telecom services. In addition, some frequencies for

Wireless Local Loop (WLL) phone services have been granted in concession to Telemóvil (a cellular operator on A band), El Salvador Network and Inversiones San Luis, to sell phone services in rural areas, which helps to solve the low phone density in these parts of the country.

Privatization has also increased the role of international companies, bringing in France Telecom and Telefónica de España. Two companies emerged from ANTEL: CTE and INTEL, in each of which a 51% stake was sold in1998.

RESULTS OF REFORM:

As shown in the figure, the telecom sector has been successfully liberalized and privatized. ANTEL was split into two companies in January 1998: CTE S.A. de C.V. which will operate as a wire phone services supplier, and INTEL S.A. de C.V. which will operate as a wireless phone services supplier using the B band. A 51% stake in CTE was sold to France Telecom in July 1998, for US$ 271 million[7] A 51% stake in INTEL was sold to Telefónica de España generating US$ 41 million to the Government. The remaining stake is to be sold to Salvadoran or foreign investors through the capital markets.

Since the reforms are so recent, restructuring in the telecom sector has resulted in only modest improvement in service coverage, as indicated in the following table:

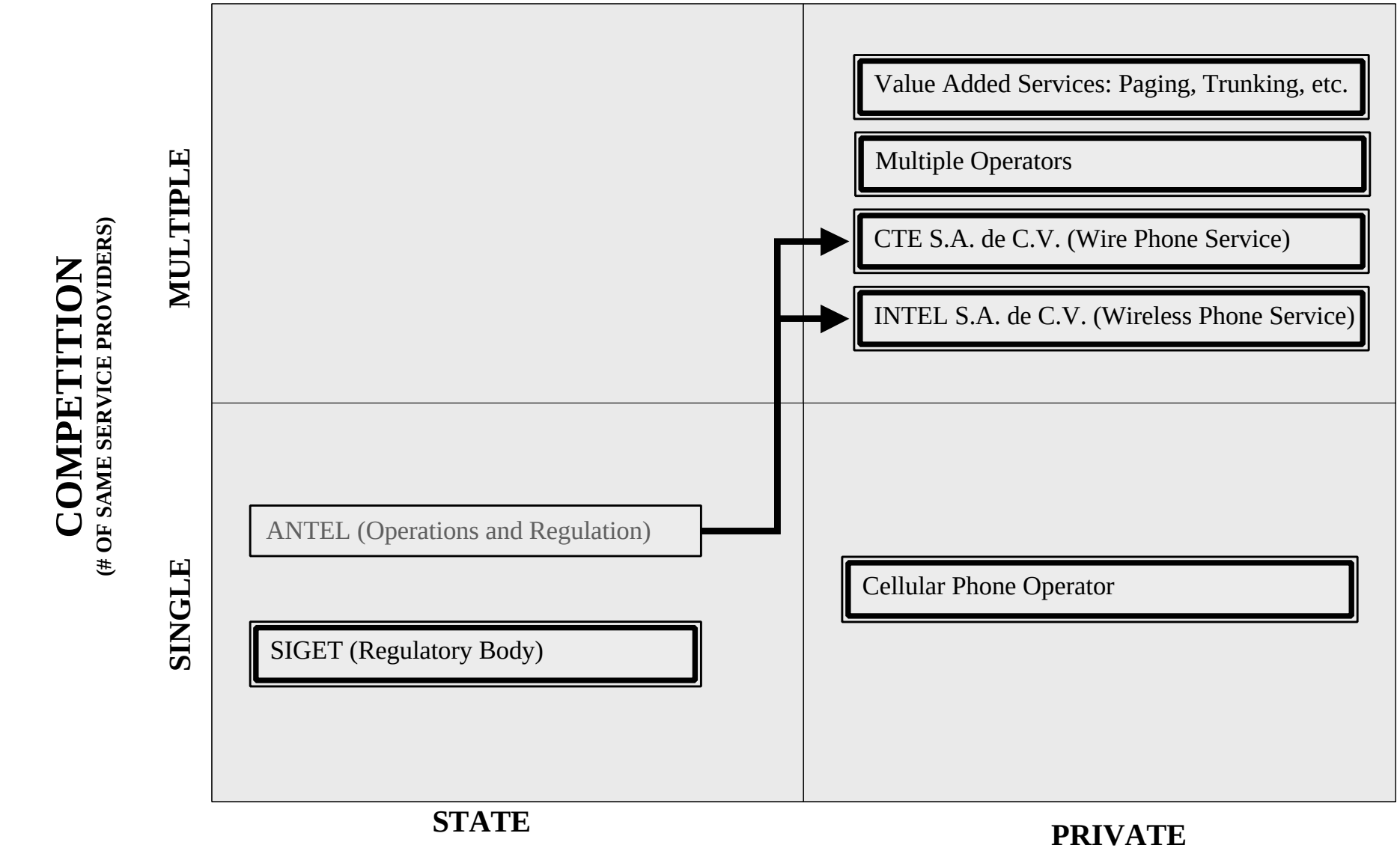
QUANTIFIABLE RESULTS OF REFORM:

Category	1995	1998
Telecom density (per 100 inhabitants)		
Total	5.61	6.11
Rural areas	1.4	1.4
Urban areas	14.15	15.0
Service providers	2	5
Call prices	Cost per minute plus ES $53 or ES $106	Cost per minute (no surcharge)

The following chart on industry structure indicates changes made, and the path of reforms undertaken.

[7] CTE workers bought 10%, 14% were sold through Wall Street and the remaining 25% will be kept by the Government.

EL SALVADOR TELECOM: INDUSTRY STRUCTURE



CARANA CORPORATION

LESSONS LEARNED/ISSUES RAISED:

The principal lessons learned in the case of telecom reform in El Salvador have to do with the targeting and timing of USAID assistance, as well as with the sequencing of reforms.

Targeting of USAID Assistance

Over the years, USAID had supported the private sector, and strongly free market, local think tank/advocacy group FUSADES. USAID financed studies and follow-up by FUSADES helped introduce and push new concepts for telecom reform that went beyond the conventional approaches undertaken elsewhere in Latin America. Identifying and working with a strong advocacy group proved extremely useful in promoting innovative reform in the Salvadoran telecom sector. Similarly, USAID was able to provide highly targeted support to the legislature and key "opinion makers" from different political parties and thus build broad political support and convert policy concepts into appropriate legislation.

Timing of USAID Assistance

Through its support of FUSADES, as well as its own personnel, USAID was ready to assist at two critical junctures: 1) in the development of new telecom legislation; 2) in preserving the liberal essence of this legislation when the party of the former guerillas came to dominate the legislature.

Sequencing

The sequence of reforms undertaken in El Salvador challenged conventional wisdom in Latin America, which called for privatization of a monopoly operator prior to liberalization/competition. In other countries, the rationale for selling the telecommunications company as a monopoly had been: 1) to obtain highest possible price for the government and thus help address a fiscal crisis; and 2) leverage the granting of a monopoly in return for negotiated levels of investment and increased capacity. However, El Salvador opened the market to competition under the regulation of a strong, independent authority prior to privatization. Despite this sequence of reforms, the two ANTEL spin-offs as well as new concessions attracted a high level of bidding. This fact suggests that the government can attract a high level of private sector interest and investment and high prices for the assets/concessions sold, while also introducing competition and driving down prices to consumers. While it is too soon to clearly evaluate the impacts, it appears that all stakeholders are likely to benefit from this model.

B. GUATEMALA TELECOM

BACKGROUND TO REFORM:

Historically, Guatemala has been one of the Latin American countries with the lowest levels of state ownership and expenditure (as a percentage of GDP). However, as in most of the region, the principal infrastructure sectors came under monopoly state control. Interestingly, in the late 1980s and early 1990s, the Guatemalan government was among the least interested in privatization of these sectors.

The state monopoly, Empresa Guatemalteca de Telecomunicaciones (GUATEL), was created in April 1971. The telecom sector was regulated through two departments in the Ministry of Communications, Transport, Public Works and Housing. In 1985, the government of General Mejía Víctor launched a National Dialogue to discuss improving the poor state of infrastructure and services in Guatemala. Recommendations were established for the energy and telecom sectors. Technological advances in the telecom arena were pointing to the end of telecom as a natural monopoly, and recognition of this fact eventually shaped telecom policy reform in Guatemala.

If technological change provided the context for reform, a strong private sector increased the pressure for telecom reform. In fact, the private sector contested GUATEL's monopoly in the Supreme Court and won. In 1994, a local think-tank, the Center for National Economic Research (CIEN), working with the USAID supported Guatemalan Entrepreneurial Chamber (CAEM) identified and contested the fact that frequencies were being granted to special interest groups.

In 1996, the Guatemalan government began to promote telecom reform. At this time, the country had low teledensity (2.5 per 100 inhabitants), and telecom service was poor with a high percentage of incomplete calls and long waiting lists, making the sector environment ripe for reform. Telecom reform in Guatemala was also influenced by reforms in El Salvador, which provided regional experience on which Guatemala could draw.

USAID ROLE:

USAID supported the Telecom Sector Reform in Guatemala through two specific initiatives, one undertaken through the International Center for Economic Growth (ICEG) and the other directly by the USAID Guatemala Mission. Under the first initiative undertaken in November 1995, USAID funded a trip for a member of the Guatemalan Congress (Mr. Alfredo Guzmán) and a (CIEN) representative to the University of California at Berkeley to discuss issues of telecom liberalization with a foreign advisor.[8] At this time, the Guatemalans presented and discussed a

[8] Professor Pablo Spiller, who was an IDB and USAID consultant in El Salvador on telecommunications and energy issues.

draft telecom law, based on Chilean and New Zealand experience. The total cost of this initiative was under $5,000.

When congressman Guzman became the head of GUATEL in January 1996, USAID sponsored a conference to discuss different approaches to the telecom reform, and then sponsored a foreign advisor to work on the draft telecom law. USAID's main goals in supporting these activities were to contribute to the achievement of Guatemala's overall economic reform as envisioned by the recently appointed administration. The total amount of this project was US$ 79,108, funded through a USAID grant to CIEN.

In short, USAID spent US$ 83,838 through grants, not given directly to the Government but to CAEM and CIEN, with co-payments from CIEN. However, USAID had also provided support to these private sector advocacy organizations over a longer period of time, enhancing their capability to analyze and advocate economic and business related issues.

ROLE OF OTHER DONORS:

Other donors played a relatively limited role in setting the stage for telecom liberalization: the World Bank financed a study of the investment climate in the telecom sector and the IDB sponsored a telecom sector study.

PRIVATE SECTOR INVOLVEMENT:

The private sector entered the scene early in Guatemala, prior to a focused government reform plan. In 1991, the private sector began providing cellular phone services, and a private entity began operating a "teleport." Interconnection contracts between GUATEL and these companies (COMCEL and Telepuerto de Guatemala) were signed. Later, the Chamber for Free Enterprise presented a petition before the Supreme Court, and won, on the constitutionality of GUATEL's exclusive right to operate telecom services in Guatemala. Legal security was thus granted to some firms that were operating as value-added service suppliers, such as radio communications and data transmission, and new entrants began to introduce strong competition in selected services.

The new Telecom Law of Guatemala allows private sector involvement in all related services. Illustrating the new open market, the registry of the Superintendent of Telecommunications (ST) lists 220 potential suppliers of telecom services, classified in 15 categories by type of service. These services are local telephone, rural telephone, international telephone, public telephone, cellular telephone, PCS, data transmission, internet, cable TV, trunking, radio communications, paging, other value-added services, fax and telex. These firms include foreign companies and joint ventures. The privatization of TELGUA further increased private sector participation.

RESULTS OF REFORM:

The structure of the telecommunications sector before and after reform is shown in the attached figure. The sector has been liberalized, state assets privatized, and tariffs rationalized. A separate regulatory body has been created, although not politically independent, which could pose problems over time.

New entrants have successfully come on the scene, such as PCS and wire telephone services provided through cable TV companies. This has been accomplished by the auctioning of frequencies under transparent procedures.

In July 1997, GUATEL was restructured into TELGUA, a company 95% owned by the Government and 5% by workers. In October 1998, after an earlier failed attempt, TELGUA was sold for US$ 700 million to a local consortium.

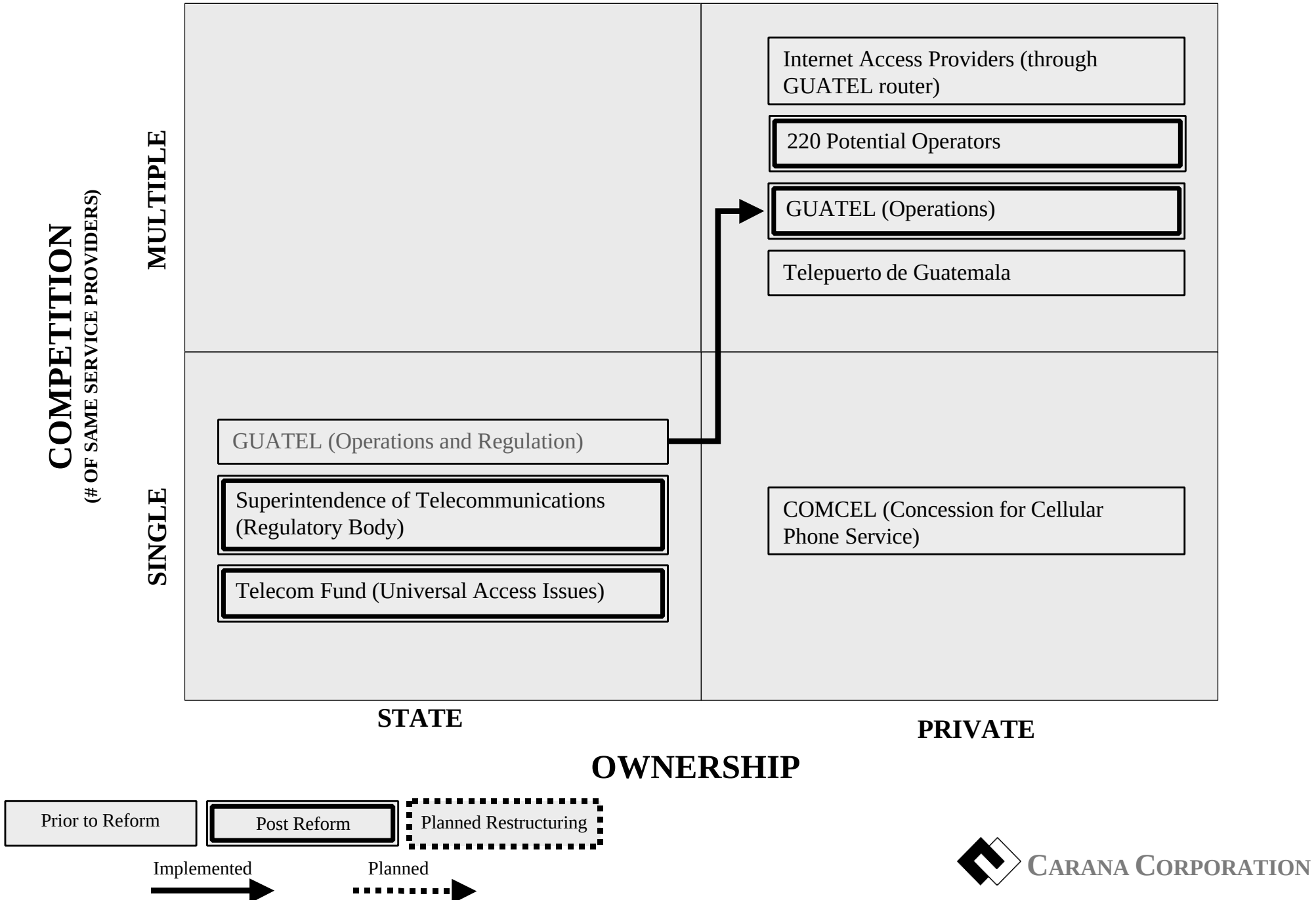
Indicating a high level of investment in the sector over the past two years, telecom density has increased from 2.5 lines per 100 inhabitants to 5.3 lines--a 70% increase in lines in two years. At the same time, rates have declined dramatically. Some of the more notable results are indicated in the table:

QUANTIFIABLE RESULTS OF REFORM:

Category	1996	1998
Telecom density (per 100 inhabitants) Total Metro Rural	 2.5 12.5 1.3	 5.37
Subscribers	381,456	576,597
Telephone lines	338,035	505,000
Call prices Local Domestic 3-minute call to U.S.	 0.6 cents quetzal Q 0.19 - 0.48 (range) $4.68	 0.20 cents quetzal Q 0.35 (fixed) $1.8
Cellular phone subscribers (COMCEL)	43,421	64,194 (end of 1997)
Service providers	1	220 potential suppliers in 15 categories; several mixed capital firms
Installed lines		10,000 per month

The following chart on industry structure indicates changes made, and the path of reforms undertaken.

GUATEMALA TELECOM: INDUSTRY STRUCTURE



CARANA CORPORATION

LESSONS LEARNED/ISSUES RAISED:

As in the case of telecom reform in El Salvador, the lessons learned in Guatemala are related to the targeting and timing of USAID assistance, as well as sequencing of reforms.

Targeting of USAID Assistance

USAID worked with strong local advocates of reform such as CAEM and CIEN. Again, through these relationships, USAID was able to provide highly targeted support to convert policy concepts into appropriate legislation and to help build political support. Carefully targeted support focused on the policy framework, provision of support to key advocates, and mobilization of public support, proved very cost-effective.

Timing of USAID Assistance

The Guatemalan environment was ripe for USAID support on telecom reform. The key to successful delivery of assistance was that USAID was able to move quickly to capitalize on the opportunity, and could do so through existing local counterpart institutions.

Sequencing

Following the experience in El Salvador, Guatemala opened the telecom sector to competition, and also enjoyed a successful privatization of TELGUA. This sequencing of reforms was in keeping with the relatively strong role of the private sector in the Guatemalan economy as a whole. In Guatemala, the impact on new capacity and lower rates has been much more dramatic than in El Salvador, even though reforms and privatization occurred almost at the same time. It is not clear whether El Salvador's decision to establish ceiling rates has been a significant factor.

C. COSTA RICA TELECOM

BACKGROUND TO REFORM:
Basic telephone services in Costa Rica are operated by the Instituto Costarricense de Electricidad (ICE), which is also the largest electric power supplier in the market. The Costa Rica telecom sector had been performing adequately prior to reform, with relatively high teledensity in the context of Latin America. A few figures illustrate the relatively strong position of the sector:

Telecom Density per 100 inhabitants (1998)	19 lines Growing at 15% per year since 1992
Telephone lines (1998)	505,000
Cellular phone subscribers (1997)	46,000

Costa Rica has long prided itself on the provision of public services that are both accessible to most of the population and of relatively high quality. As a result, the government has been slow to accept the need for telecom reform, and especially for privatization. However, growing fiscal pressures have contributed to insufficient investment over the past two decades. Resulting indicators of insufficient investment in telecommunications include: unsatisfied demand of 50,000 lines,[9] and average total capacity utilization of 88% (high in comparison to other countries), creating congestion problems in the system. Between 1988 and 1998, the investment gap (difference between actual and required investment) reached $87 million**.** At the same time, investment in value added services have also lagged.

Recognizing the need for new approaches, the government of Costa Rica began discussing telecom reform in late 1995 (Figueres government), without addressing possible privatization of ICE. It proposed a draft telecom law to Congress, which laid out plans for a gradual liberalization of the market allowing for private participation. The draft law proposed a decentralized but not politically independent regulatory body. In order to guarantee universal phone service, the draft law proposed a Universal Telecommunication Service Fund (UTSF), to be administered by the regulator. Congress did not pass this law.

When a new Government came to power in the spring of 1998, the telecom issue arose again. At this time, a USAID supported local think tank/private sector promotion entity (CINDE), presented a new reform approach for the Costa Rican telecommunications market, based more on the spirit of an open market as laid out in the Guatemalan and Salvadoran telecom laws. CINDE had been working with a USAID funded foreign advisor, who had been involved in the telecom reforms in those two neighboring countries. The new Government approved CINDE's proposal

[9] According to ITU the unobserved unsatisfied demand could be as much as 3 or 10 times higher than the observed level.

of a competitive market but did not accept the privatization of ICE, and submitted this modified approach to Congress.

In the fall of 1998, a majority agreement was forged for opening up the telecommunications sector in Costa Rica. This policy framework sets the stage for phased liberalization, beginning with the passage of a new law and creation of a strong, independent regulatory body, followed by competitive value-added services, concessioning of bands, and eventually culminating in a competitive market for all telephone services.

USAID ROLE:

Though the USAID Mission in Costa Rica was closed in 1996, the regional USAID mission for Central America has been supporting telecom reform in Costa Rica as part of a regional project. Through an agreement between CINDE and the Secretaría de Integración Económica Centroamericana (SIECA), USAID/G-CAP has financed four specific programs in Costa Rica regarding telecom reform: (i) a seminar on recent telecom developments and Central American competitiveness;[10] (ii) technical assistance to draft a telecom law proposal for Costa Rica; (iii) a seminar for Central American regulators;[11] and (iv) technical assistance to draft a law allowing the Costa Rican government to grant concessions for either a cellular band or a PCS band. All the programs focused on public education for policy makers on telecom reform. USAID spent $140,000 supporting the above activities, and CINDE as a local counterpart devoted $67,550.

The first three programs were carried out during the former administration in Costa Rica, which, although it had requested USAID support, did not buy into the need for a new telecom law. Work on the draft law by CINDE allowed a running start on telecom reform once the new government was elected. The new government eventually returned to USAID asking for support in the form of a "communication strategy" involving technical assistance to policy makers and other officials, study tours, and a public education campaign. USAID contributed $250,000 towards these activities, bringing total USAID spending on telecom reform to $390,400. CINDE again covered all local support costs.

ROLE OF OTHER DONORS:

USAID has been the only donor organization supporting telecom reform in Costa Rica since 1997. Prior to that, the World Bank provided technical assistance to the previous government for study and analysis on opening the telecom market.

PRIVATE SECTOR INVOLVEMENT:

Early private sector participation in the telecom sector, prior to the initiation of serious reform discussions, was unsuccessful. The first concession of a cellular band was granted in Costa Rica at the

[10] "Seminario Telecomunicaciones, Globalización y Libre Comercio: su Impacto en la Competitividad de Centro América", San José, Costa Rica, April 1997.

[11] "Regulación del Sector de Telecomunicaciones: Avances en Centroamérica y Panamá", Guatemala City, Guatemala, March 27, 1998.

beginning of 1990, but was terminated in 1995 due to legal problems arising from the award process. In fact, the Constitutional Court decided that the government lacked the legal foundation to grant the concession, and the cellular band was taken away from the private operator and given back to ICE.

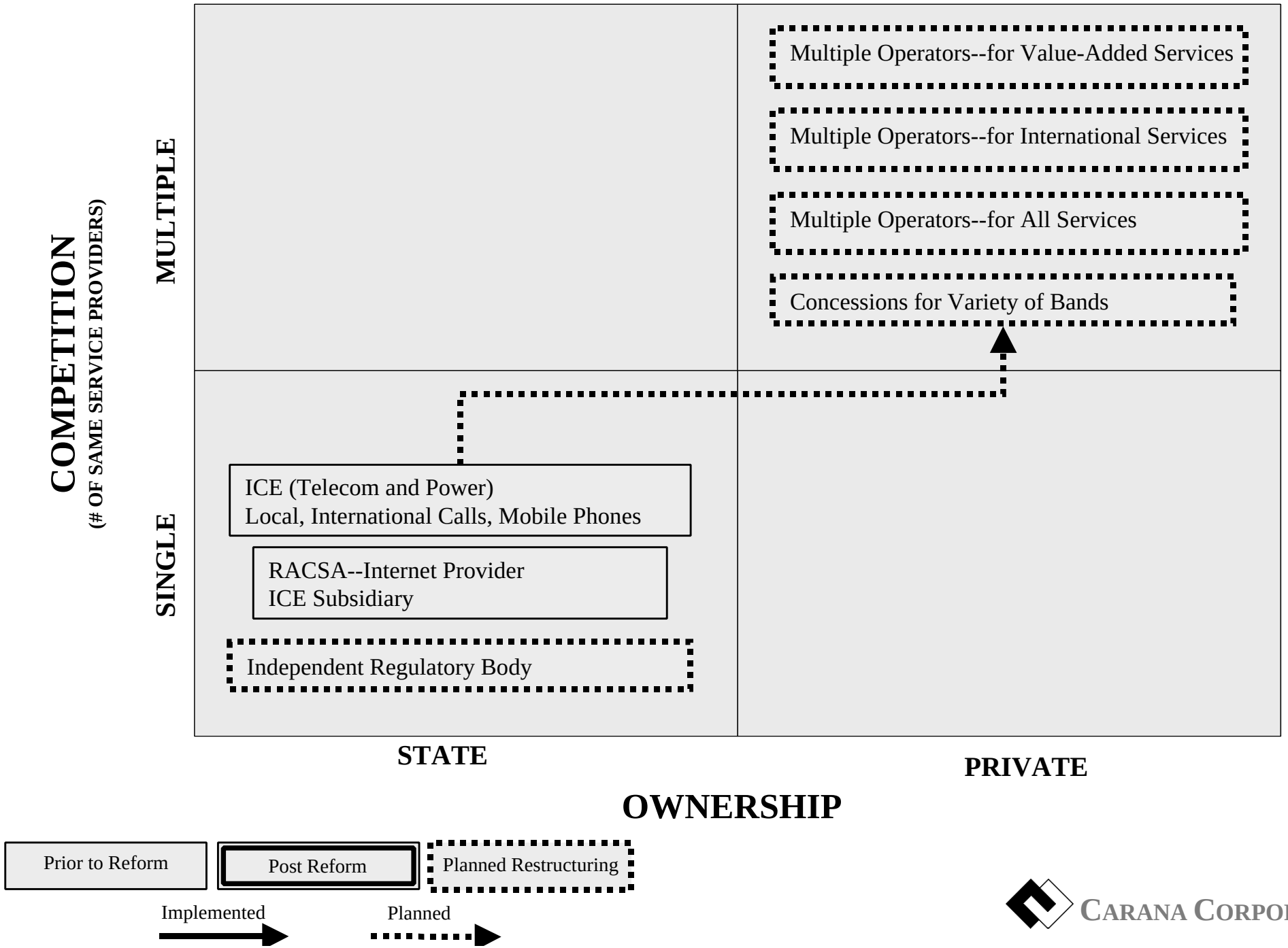
Private sector participation in the sector should increase with the planned liberalization. However, for the foreseeable future, these private service providers will be competing with the state owned ICE.

RESULTS OF REFORM:

Progress is being made on adoption of the telecom law which will allow reforms to move forward: Congress has accepted the telecom bill sponsored by USAID, and the bill is currently under discussion at Special Commission. It is too early in the reform process to talk about quantifiable results. The expected industry structure is depicted in the attached figure.

The following chart on industry structure indicates planned changes, and the path of reforms that will be taken.

COSTA RICA TELECOM: INDUSTRY STRUCTURE



CARANA CORPORATION

LESSONS LEARNED/ISSUES RAISED:

The Costa Rican telecom reform case differs from those of El Salvador and Guatemala in the environment surrounding reform and in the reform path chosen. The lessons learned relate to the catalyst sparking reform, the targeting of USAID assistance, and the sequencing of reforms.

Catalyst

Costa Rica is different from the other Central American countries in that it has a relatively long tradition of fairly effective public services provided by state institutions. The telecom sector was operating adequately, and thus the need for reform in the sector was not perceived as being urgent. Eventually, the pressure for reform came from the need for additional investment, which the government could not provide in order to expand basic and value added services to meet rapidly growing demand (especially given growth in increasingly sophisticated export oriented and telecommunications sensitive services and industries).

Targeting of USAID Assistance

As in the other Central American cases included in this study, USAID supported private sector advocacy groups in Costa Rica and these played an important role in promoting telecom reform. CINDE has always been particularly concerned with investment promotion, and telecommunications was perceived as playing an important role in maintaining the country's competitiveness, especially as it moves towards higher value activities.

Sequencing

Costa Rica chose to increase investment and improve quality of service by opening the market to new entrants, while maintaining state ownership of the principal operator for the foreseeable future. It is still too early to determine how this model, in which private sector entrants compete against a dominant state-owned operator, will ultimately impact the level of investment and quality/cost of services to consumers.

D. PHILIPPINES TELECOM

BACKGROUND TO REFORM:

Unlike the other telecom case study countries included in this report, the Philippine telecom sector is characterized by a private oligopolistic system rather than a state telecom monopoly. During the Marcos administration (1965 –1986) many of the larger telecom companies were owned by President Marcos and his associates. The main companies, which by virtue of their size, held monopoly positions in their particular areas of activity, included:

- Philippine Long Distance Telephone Company (PLDT): dominated the industry through its Telephony Service, International Gateway Facility (IGF), and leased lines for both voice and facsimile long distance transmission to other companies. PLDT serviced the more profitable urban areas in order to reap maximum profit from its international gateway service.
- Philippine Communications Satellite Corporation (Philcomsat): monopoly on international satellite transmission facilities;
- Domestic Satellite Philippine (Domsat): monopoly on domestic satellite transmission facilities;
- Eastern Telecommunications Philippines, Inc. (ETPI): provision of international telex and data communications services.

Other private operators, who came together under the Philippine Association of Private Telephone Companies (Paptelco), were relegated to provide service to less profitable rural areas. This structure, with PLDT focusing on urban areas and small operators on the rural areas, resulted in inequitable distribution of telephone lines in the country, with approximately 90% of telephone lines concentrated in urban areas. (Further underscoring poor line distribution is the fact that 60% of telephone lines are located in metro Manila, which represents only 14% of the country's total population.) This situation contrasts with that of Costa Rica, for example, where a *state* owned monopoly provided access to basic telephone services to most of the population (albeit in a much smaller country).

The industry structure, combined with economic crises and political upheavals, constrained investment in network development and expansion, and as a result, development of Philippine telecommunications fell behind the level achieved in the rest of Southeast Asia.

Reform in the telecom sector can be divided in two phases. Under the first phase, the Aquino administration promoted new entrants in an attempt to increase competition in the sector. Seven new franchises were granted, seven existing ones were amended or renewed, five new operators were allowed into the paging market, two new operators into international gateway services, and an additional cellular mobile operator was allowed into the market. The administration also authorized the introduction of technologies such as VSAT (Very Small Aperture Terminal) satellite services and trunk radio networks. Through the Telephone Act of 1989, the Aquino administration mandated increased coverage through the provision of public calling offices. Although liberalization of the sector was encouraged, competition was hampered significantly by PLDT refusal to allow interconnection with its public switch telephone network (PSTN). In

effect, the Aquino administration had liberalized the sector without accompanying regulatory reform, and the result was limited change in the overall industry structure.

The second phase of telecom reform, occurring under the Ramos administration, took the Aquino measures one step further by directly addressing the issue of regulatory reform. The administration passed an Executive Order on "Mandatory Interconnection of Existing/Future Telecommunication Service Providers." To increase universal access to basic telecom service, it passed an Executive Order on "Policy to Improve the Provision of Local Exchange Service," which resulted in obligatory line installation by operators. At the same time, the Ramos administration took measures to improve the overall investment climate in the country. The results of these reforms have been a dramatic increase in teledensity, and a more rational pricing structure.

USAID ROLE:
USAID has undertaken four main projects since 1991, as described below.

- *Telecom Component of the Study on Barriers to Entry to the Philippines (1991-April 1992)*
  The main goal of this project was to develop background information on entry barriers for telecommunications service providers in the country and propose policy recommendations to remove these or minimize their negative effects. This study was part of a Technical Assistance (grant) project to the Philippine Government. The cost of the effort, undertaken by a local consulting firm (SGV), was US$ 20,000 for the telecom sector.

  This study was timely since the restoration of democracy and government openness to policy change had improved the likelihood for adoption of recommendations. The subsequent liberalization and introduction of competition in the telecom sector were important in encouraging increased investment in the sector (and, consequently, improvement in the overall economy).

- *Mixed Credit Facility (September 1990-August 1992)*
  This credit facility was part of the USAID Philippine Capital Infrastructure Support Project (PCIS) whose main goal was to promote the sale of U.S. manufactured goods and related services in priority Philippine infrastructure areas, and facilitate domestic and foreign private sector investment. The instrument used was a mixed credit facility with the US EXIM Bank. A concessional financing facility (CFF) was established, made up of a grant fund from USAID and EXIM Bank with commercial loans guaranteed by the EXIM Bank. The total amount of financing in the telecommunications sector amounted to US$ 34.9 million.

  This project was instrumental in bringing advanced telecom technology to the Philippines. For example, state-of-the-art satellite and trunked radio systems technologies are being introduced in the country, thanks, in part, to this project. In remote areas, where the private sector had not come in to provide services, PCO technology was the only solution at the time. Stakeholder interviews indicate that the timing for this project was also good: there was a need by both the public and private sectors for this type of financing facility.

- *Technical Assistance for the National Telecommunications Commission (NTC) (May 1995-June 1997)*
  The main objectives of this project were to increase the number of telephone lines, and improve the efficiency and reliability of NTC services by strengthening the policy and regulatory environment for telecommunications. The project undertook to:

  - Provide sound technical and commercial guidance to the NTC on various complex industry issues, such as monitoring the basic telephone program, tariff re-balancing, emerging technologies, and interconnection monitoring;
  - Enhance the institutional capability of the NTC to regulate the telecommunications industry through improving policies and implementing guidelines to "level the playing field" and to promote competition among industry players;
  - Strengthen the strategic planning management capabilities of the NTC through access to better training, productive study tours, seminars and workshops, to speed up the delivery of efficient NTC services; and
  - Facilitate sustainable NTC projects, (i.e., Establishing a monitoring system of service areas) through improved development and management processes to encourage incremental public investment.

  Assistance was delivered through advisory services, training and technical study tours, and commodity procurement. The total project cost was a little over $2.5 million, with roughly 50% spent on Advisory Support Services, 25% on Institutional Strengthening (training), and 25% on Commodity Procurement.

- *Technical Assistance to the Department of Transportation and Communications (DOTC) (1997-1998)*
  The last project undertaken by USAID in support of telecommunications reform was technical assistance to the DOTC. The main goals of this project were to support the DOTC in policy modifications and development of new policy to 1) promote continued growth of the local telecommunications industry under a competitive environment; 2) achieve universal access; and 3) improve the competitiveness of local telecommunications firms in the global market.

  USAID financed advisory services to the DOTC, and study tours, as well as workshops with international industry experts and service providers. Analyses and recommendations were made on Universal Access to Basic Telecommunications Services; Broadband Services; and Global Mobile Personal Communications by Satellite (GMPCS). Total USAID resources devoted to this project amounted to $249,900.

ROLE OF OTHER DONORS:

The main assistance provided by other donors consisted of CIDA (Canadian development agency) assistance for strengthening municipal telephone projects, and JAICA (Japanese development agency) assistance for equipment procurement.

PRIVATE SECTOR INVOLVEMENT:

Historically, the private sector has dominated the Philippine telecom sector through exclusive, monopoly "franchises" granted by the state. Additional services have been provided by a multitude of small private operators, but these have been relatively insignificant. This structure has had both positive and negative implications for reform. On the positive side, reform efforts can focus on liberalization (and improved regulation) since the industry is already private. However, the private monopolists represent powerful interest groups, perhaps more difficult to deal with than government monopolies. These implications are discussed further in the "Lessons Learned" section below.

The Mixed Credit Facility, in which USAID participated, played a role in increasing U.S. private sector involvement in the Philippine telecom sector. For instance, Motorola and GTE spacenet radio systems and hand-held radios for use in the Mt. Pinatubo emergency were purchased through this loan package. PCOs for Camarines Norte were American made. Philippine readiness for advanced technology, has encouraged increased trade with many of the more developed countries.

RESULTS OF REFORM:

Telecom reform in the Philippines has resulted in increased competition in the sector, improved local exchange services (mandatory provision), the mandatory installation of lines, and tariff rebalancing. Regulatory reform has focused on the issue of mandatory interconnection requirements. Critics claim, however, that reform looks better on paper than in reality because interconnection is poorly enforced. The impact of reform on industry structure is illustrated in the attached figure.

The strong improvements in the sector are captured in the table below. The baseline date is 1992, when the Ramos administration came to power. The rather dramatic changes reflect the impact of mandatory installation and interconnection requirements on increased investment and service, as well as tariff rebalancing on rates.

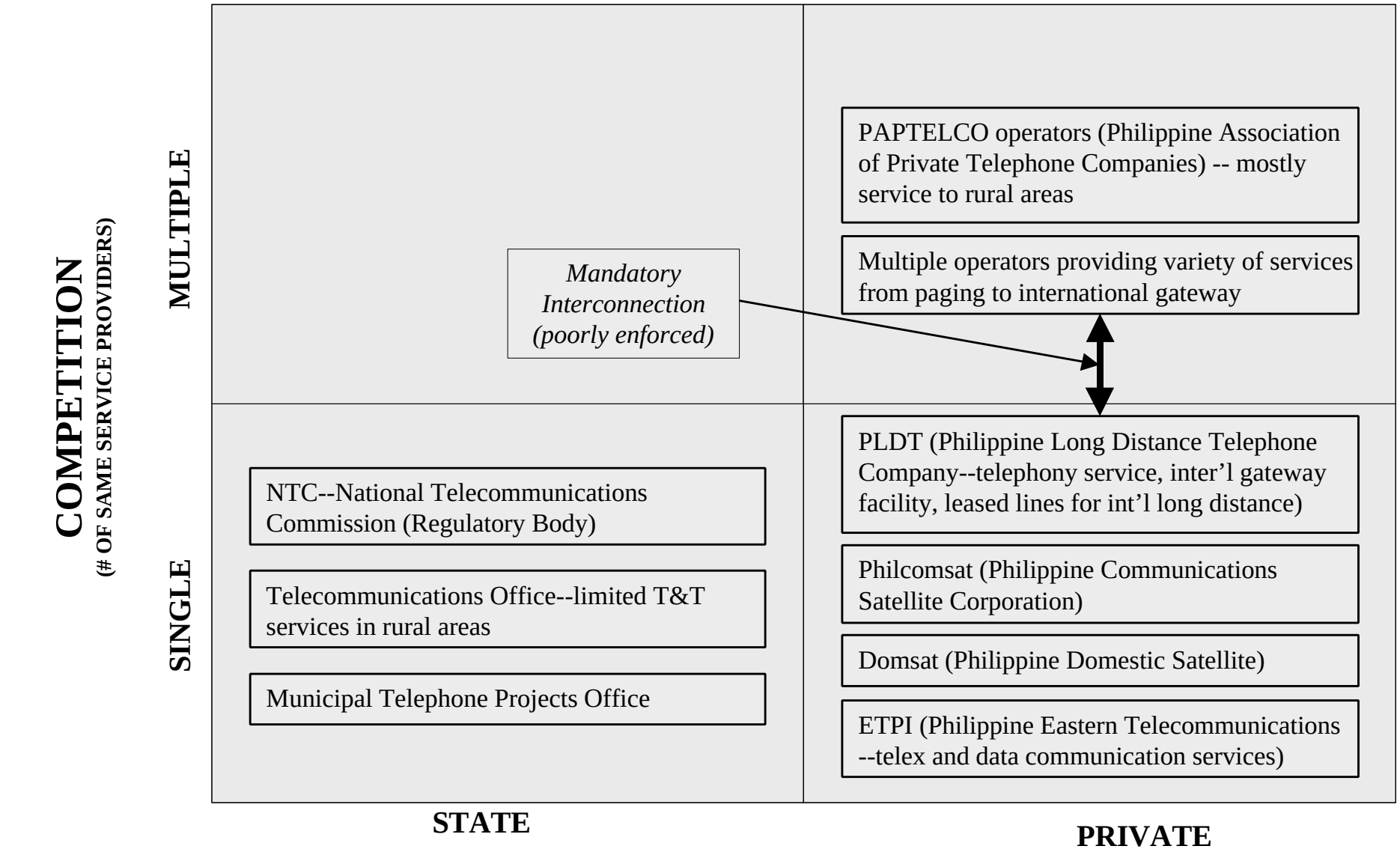
QUANTIFIABLE RESULTS OF REFORM:

Category	1992	1997
Telecom density		
National Capitol Region (NCR)	68%	48%
Other regions	32%	52%
Telecom density (per 100 inhabitants)		
Total	1.409 (with party line)	8.07
Metro (NCR)	7.287	28.62
Rural areas	0.523	4.8
Subscribers	887,229	2,764,870
Telephone lines	887,229	5,775,556

Category	1992	1997
Call prices		
Local residential	$9.26	$10 - 12.5
Business	$18.89	$ 26.35
Domestic long distance	$0.05 – 0.39/minute, $0.007 – 0.36 per additional minute	$0.075 - 0.15/minute, $0.10 - 0.30 per 10 seconds
3-minute call to U.S.	$9	$5.4
Waiting period (unofficial)	About 10 years	3 to 4 months
Cellular phone subscribers	56,044	1,343,620
Registry of the National Telecom Commission		
LEC Service Provider	1 big private telco 40 small telcos 1 national government telco 3 local government telcos	10 big telcos 62 small telcos 1 national government telco 3 local government telcos
Service providers		
Cellular Service	2	5
International Gateway Facility	3	11
Paging	6	15
Public Trunk Repeater	7	10
Satellite Service	3	3
International Record Carrier	4	5
Domestic Record Carrier	6	6
VSAT	4	4
Public Control Station	13	12
Radio Telephone	4	5
Installed lines per year	636,578	5,775,556
Investment in telecommunications	$1.8 per capita	$11.8 per capita

The following chart on industry structure indicates changes made, and the path of reforms undertaken.

PHILIPPINE TELECOM: INDUSTRY STRUCTURE



CARANA CORPORATION

LESSONS LEARNED/ISSUES RAISED:

The Philippine telecom case is interesting because it provides an example of government pushing for restructuring of a privately controlled industry. The main lessons learned emerging from this case study have to do with sequencing of reforms.

Sequencing

The fact that the industry, prior to reforms, was already private but unable to adequately meet telecom service needs at internationally competitive rates, provides a valuable lesson for countries with state owned telecom sectors. The striking results in terms of improved service following liberalization suggest that introducing competition (and facilitating new entrants and investment) is more important than just private ownership.

In the Philippine environment, "leveling the playing field" for all participants has been a crucial element of reform. Regulatory reform, as an essential component of liberalization, is critical in both creating and enforcing these "rules". Furthermore, mandating interconnection emerges as a particularly crucial step in "leveling the field" (as has been the case in the US), but it must be accompanied by enforcement.

Timing of USAID Assistance

Because USAID intervention in the Philippine telecom sector began in the early 1990s when the Government of Philippines was prepared to address reform, assistance was provided at a time when many of the policy recommendations promoted by USAID were most likely to be adopted.

E. MAURITIUS TELECOM

BACKGROUND TO REFORM:

Mauritius is economically and politically stable, and has enjoyed sustained economic growth of 5-6% per year in the 1990s. The government of Mauritius has a clearly defined vision for developing the island country into an offshore commercial center and international financial services provider. This vision precipitated and shaped reform in the telecom sector since a modern and widely accessible communications system is considered vital to the success of this strategy. The government considers telecom to be central to competitiveness in these strategic sectors.

Under the government developed reform program, the telecommunications sector is undergoing a gradual transition from a state owned monopoly to a private company operating in a competitive environment. Helping to drive telecom reforms forward has been Mauritian participation in the World Trade Organization. In 1997, the country signed the WTO Telecommunications Agreement. In doing so, Mauritius agreed to end the monopoly and exclusive rights in domestic and international services by the year 2004. In order to be prepared for compliance with the WTO agreement, the government has been concentrating on the development of a strong and independent regulatory body as well as development of a privatization plan for Mauritius Telecom.

Reforms in Mauritius can be plotted in three consecutive phases, with some overlap: commercialization, liberalization, and privatization. The first stage, commercialization, has been successfully completed. The second stage, liberalization leading to increased competition, is well under way. New entrants are supplying cellular and value added services. A regulatory body is being developed to level the playing field and protect consumer interests. The third stage, which is under discussion, will be the privatization of Mauritius Telecom, with the participation of a strategic equity partner (SEP).

USAID ROLE:

USAID has provided a small amount of short-term assistance on legal and regulatory reform to Mauritius through the country's membership in the Southern African Development Community (SADC). USAID assistance comes out of its Regional Center for Southern Africa (RCSA), based in Botswana, which is running the Southern Africa Regional Telecommunications Restructuring project (RTR). Telecom sector support is covered in the RCSA Strategic Objective No. 2 "a more integrated Regional Market," in which the more efficient provision of infrastructure is identified as Intermediate Result No. 2 (IR2). The RTR project is slated to be funded by USAID for four years. The RTR project promotes improved telecommunications through three main activities:

1. Delivering technical assistance in support of restructuring efforts (privatization, policy, and regulatory issues);
2. Promoting increased interaction among the telecommunications communities of Southern Africa and the U.S. and others;
3. Providing education on management and technical issues.

The RTR project has sent short term advisors to assist in the legal and regulatory reform process in Mauritius. Consultants participated in the drafting of policy papers and government programs, and commented on the telecom law prepared by the Mauritians. The RTR project currently has a resident advisor in Mauritius, working on development of the regulatory authority. Mauritian telecom players also participate in RTR program organized study tours and regional conferences. It is estimated that USAID, through the RTR program, has devoted roughly $200,000 to telecom reform in Mauritius.

ROLE OF OTHER DONORS:

The International Telecommunications Union (ITU) has been the principle source of guidance on international standards, through conferences, seminars, and the large Internet resource open to members. In addition, the European Union has conducted extensive work on competition policy. The OECD has also provided assistance.

The World Bank funded consultants to work with the Telecom Advisory Council on the liberalization of the telecom sector, the privatization of Mauritius Telecom, and bringing in a strategic partner. During this activity, World Bank consultants conducted a market survey and developed a new draft Telecom Bill. However, progress on a World Bank Structural Adjustment Loan which would have provided financing for sector restructuring, was stymied by Mauritian government concern about debt financing and currency exchange risk, as well as the fact that the government was able to borrow locally and avoid these risks.

PRIVATE SECTOR INVOLVEMENT:

Private sector involvement in the telecom sector began with a cellular phone service provider. Foreign investors have entered the market, mostly through the formation of joint ventures, both with Mauritius Telecom for particular services, and with Emtel, the cellular phone service provider. The private sector will ultimately have a bigger role when MT is privatized.

RESULTS OF REFORM:

Results of reform, achieved to date, are still preliminary since the reform process is still being implemented. "Commercialization", or the improved performance of the principal existing state company, has generally been successful. Mauritius Telecom (MT) has expanded its services, increased the number of main phone lines, and increased its profitability. MT has also benefited from being the largest player in the market, and from its continued monopoly position in long distance and voice telephony. Liberalization of the sector is underway, but is hampered by lack of a strong regulatory body.

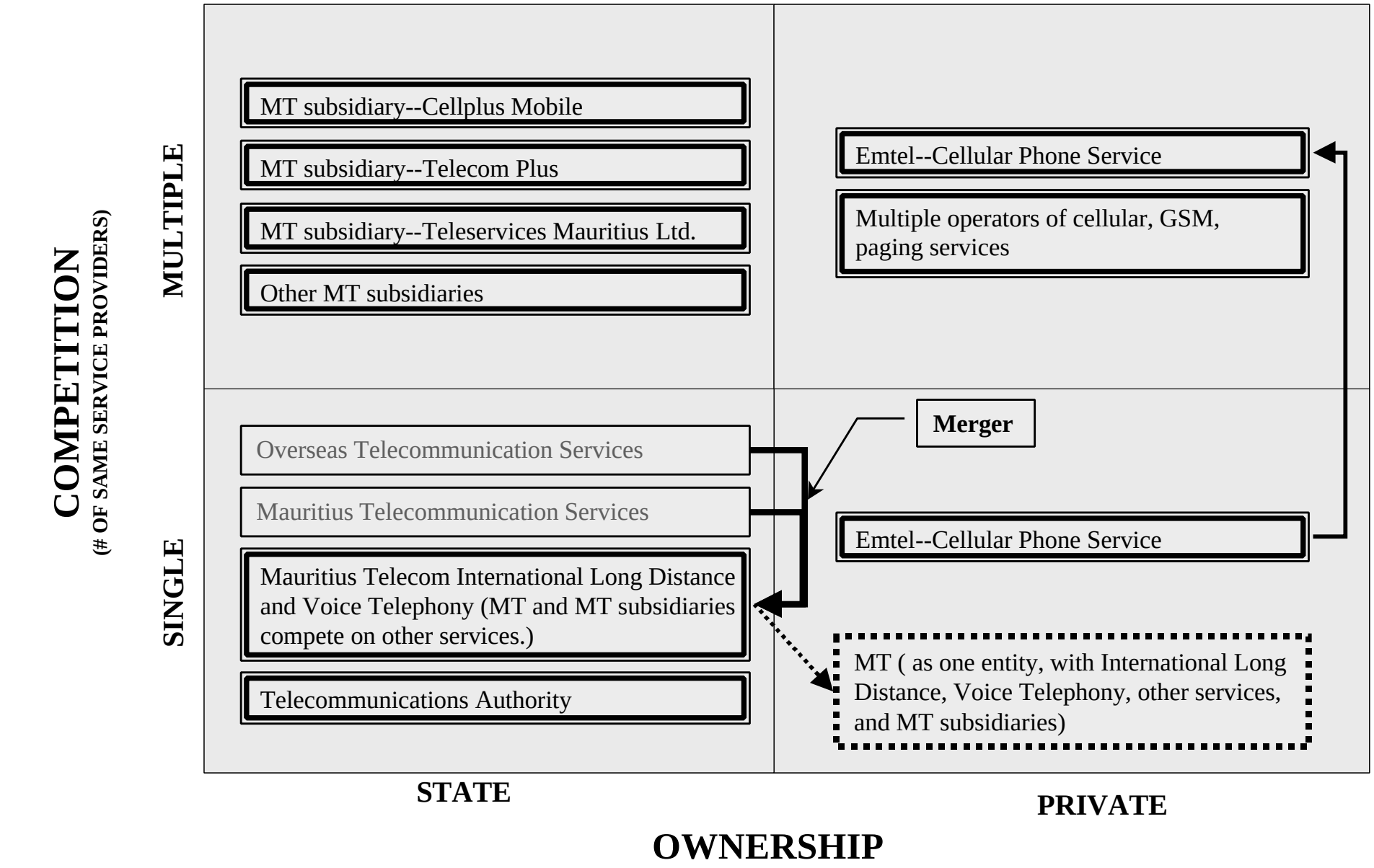
The indicators below illustrate some of the results of this commercialization approach.

QUANTIFIABLE RESULTS OF REFORM:

	1996	**1998**
Main telephone lines	165,083	253,751
Main telephone lines per 100 inhabitants	15	20
Faults per 100 main lines	63	53.5
Main Telephone lines per employee	96	127

The following chart on industry structure indicates changes made, and the path of reforms undertaken.

MAURITIUS TELECOM: INDUSTRY STRUCTURE



CARANA CORPORATION

LESSONS LEARNED/MAIN OBSTACLES:

The main lessons learned from the telecom sector reform in Mauritius involve issues of what precipitates reform, the importance of sequencing, as well as the recurring regulatory obstacle in infrastructure sectors.

Catalyst for Reform

Mauritius represents one of the few cases where the government has embarked on a systematic reform program as part of a well developed vision for economic development, and in the absence of a fiscal or sectoral crisis. One of the implications has been a gradual reform process. Because there is no crisis forcing restructuring of the industry, the government has had the luxury of moving ahead slowly through a commercialization phase, creating Mauritius Telecom as a commercial company with limited monopoly rights, and progressing slowly towards privatization. In this context of government planned and led reform, foreign donors have been facilitators rather than catalysts or advocates of change.

Sequencing

Mauritius is a fairly unique case of a country able to improve efficiency through commercialization, prior to privatization and/or liberalization, while moving ahead steadily but slowly towards greater liberalization and privatization. Although the argument can be made that telecom sector expansion and efficiency would be further ahead today had Mauritius bypassed the commercialization phase and gone straight into complete liberalization and privatization, the approach taken must be considered successful.

Regulation

The first issue with regulation is that the island country is small, and it has been difficult to identify adequate resources to staff an independent regulatory body. Limited human resources can translate into a weak regulatory body, which in turn can impede liberalization and competition within the sector.

The second regulatory issue is common to telecom sectors around the world: poor interconnection policy is an obstacle to competition in the sector. The problem of interconnection comes back to enforcement of policy which can only be effective with a strong regulatory framework and authority.

F. EGYPT TELECOM

BACKGROUND TO REFORM:

The telecom sector in Egypt has experienced significant expansion over the past 15 years. ARENTO, now Telecom Egypt, the state monopoly under the direct supervision of the Ministry of Transport and Communications, presided over growth from a half to four million lines. Egyptian infrastructure, and telecom in particular, has benefited from large-scale donor investments which have provided the main source of capital for expansion. Still, more expansion is needed to meet demand, and ARENTO's mega projects call for one million lines per year over the next 5 years, which would result in an overall investment requirement of $5 billion over the period 1997-2002.

More recently, the Government of Egypt (GOE) has been restructuring the sector, and with the passage of a new telecom law is introducing competition and liberalization with private sector participation. A regulatory body was established in 1995, and this body has recently been restructured to be more independent and thus play a greater role in the sector. The cross-subsidy between international/long distance and local service, is being addressed and some progress has been made in rate rebalancing. Competition in the sector commenced with the entry of two VSAT providers, then two payphone operators, and now, two GSM operators. All five operators and service providers will be under the regulatory oversight of the newly established Telecom Regulatory Authority.

In early December 1998, the Cabinet approved the transformation of ARENTO into a joint stock company, in accordance with the telecom law, paving the way for future privatization. The Cabinet also approved transforming the Egyptian Telephone Apparatus Manufacturing Co. into a joint stock company to be affiliated with the Engineering Industries Holding Company and subsequently, the company's shares will be offered for public subscription.

USAID ROLE:

USAID has played a major role in the economic development of Egypt since 1975, including strong support for telecommunications. Over the past 20 years, the USAID approach has evolved from an initial quick fix of physical equipment expansion, to institutional development of the state operator, to sector restructuring and regulatory reform.

USAID's role in Egyptian telecom development commenced in 1977 with the formulation of a 20-year, $20 billion Master Development Plan. Since 1978, USAID and the GOE have jointly completed a series of four telecom projects:

- 1978-1989: Telecom I, II, III--$241 million for replacement of rotary switches with electronic ones, increasing system capacity, and associated plant network expansion and upgrading. Consulting services and training were also provided.
- 1988-1992: Telecom IV--$82 million for additional physical plant expansion and improvement (new lines, upgrading), training of staff, and development of centralized operations and management center.

- 1993-1996: USAID launched the Telecom Sector Support Project (TSSP) with $200 million.
- 1996-2000: The TSSP was then extended to go through 2000 with extra funding of $100 million for network.

In addition to these projects, USAID has provided $83.3 million to the sector through the Commodity Import Program.

The TSSP project consists of support for capacity expansion and upgrading, and institutional development, based on the Government of Egypt achieving certain conditionalities. The current program objectives are in keeping with USAID/Egypt Strategic Objective I "to increase private sector-led, export-oriented economic growth." The project has given significant attention to Quality of Service, installation of Fault Clearance Centers, and funding for a Network Operations Center. In addition, the project called for a focus on development of a new telecom law, and a regulatory body. Institutional development assistance is governed by an MOU concluded between USAID and GOE in June 1994, which prescribed specific targets to be met as conditions for disbursement. As of February 1997, 82% of conditional funds had been released, leaving $21.2 million conditional upon further policy reform.

The TSSP project embraces the dual objectives of (1) transforming ARENTO into a more commercially oriented and efficient enterprise, and (2) establishing a liberalized and competitive environment. Four basic tasks were prescribed under the project:

- Institution of **legal and regulatory reforms**, including the development and adoption by the GOE of a national communications policy; the establishment of a telecommunications regulatory commission; and a legal status for ARENTO which facilitates institutional development and telecommunications services expansion.

- Institution of **management and organizational reforms**, including adoption of a Strategic Plan, development of management abilities of ARENTO staff, and the reform of personnel policies and programs.

- **Improvement of planning, operations, and services**, including the adoption and implementation of a Business Plan; time improvement of system expansion planning and network operations, and computerization of key internal systems.

- Improvement of ARENTO **financial performance**, including strengthening of financial systems, improvement of key financial ratios, and clarification of financial obligations to facilitate reinvestment of revenues in telephone plant and equipment.

ROLE OF OTHER DONORS:

Concurrent with USAID involvement, since 1980, GOE has accepted financial assistance of one form or another totaling $520 million from France, Germany, Japan, Italy and Greece for equipment procurement.

PRIVATE SECTOR INVOLVEMENT:
Under the previous telecom law ARENTO was allowed to form joint ventures with private sector entities for the provision of value-added services. The limited joint venture with Hughes and NEC in VSAT services, initial partnership in GSM, and the truly private & dual competitive providers of public payphones are attempts to explore private participation in infrastructure.

In 1997 and 1998, the most notable reform was the opening of the telecom sector for private business participation. Private operators are currently participating in the sector through the provision of GSM, VSAT, and payphone service. The private sector will play a larger role once Telecom Egypt is partially privatized.

RESULTS OF REFORM:
On the institutional side, a new telecom law was developed and passed, the institutional set-up for the regulatory authority has been strengthened, and the sector has been opened to competition in value added services. At this writing, there are five operators in the sector: ARENTO plus two payphone and two GSM service providers. ARENTO was "commercialized", and converted into Telecom Egypt, financial performance has improved, and some rate rebalancing has taken place. The Government of Egypt has committed to partial privatization (49%). In terms of facility expansion, there has been an annual growth rate of 14% in working lines over the 15 year period (1981 – 1996).

The table below illustrates that expansion of services over the past two decades has been significant:

Telecom Service Indicators in Egypt (1981, 1995, 1996, 1998)

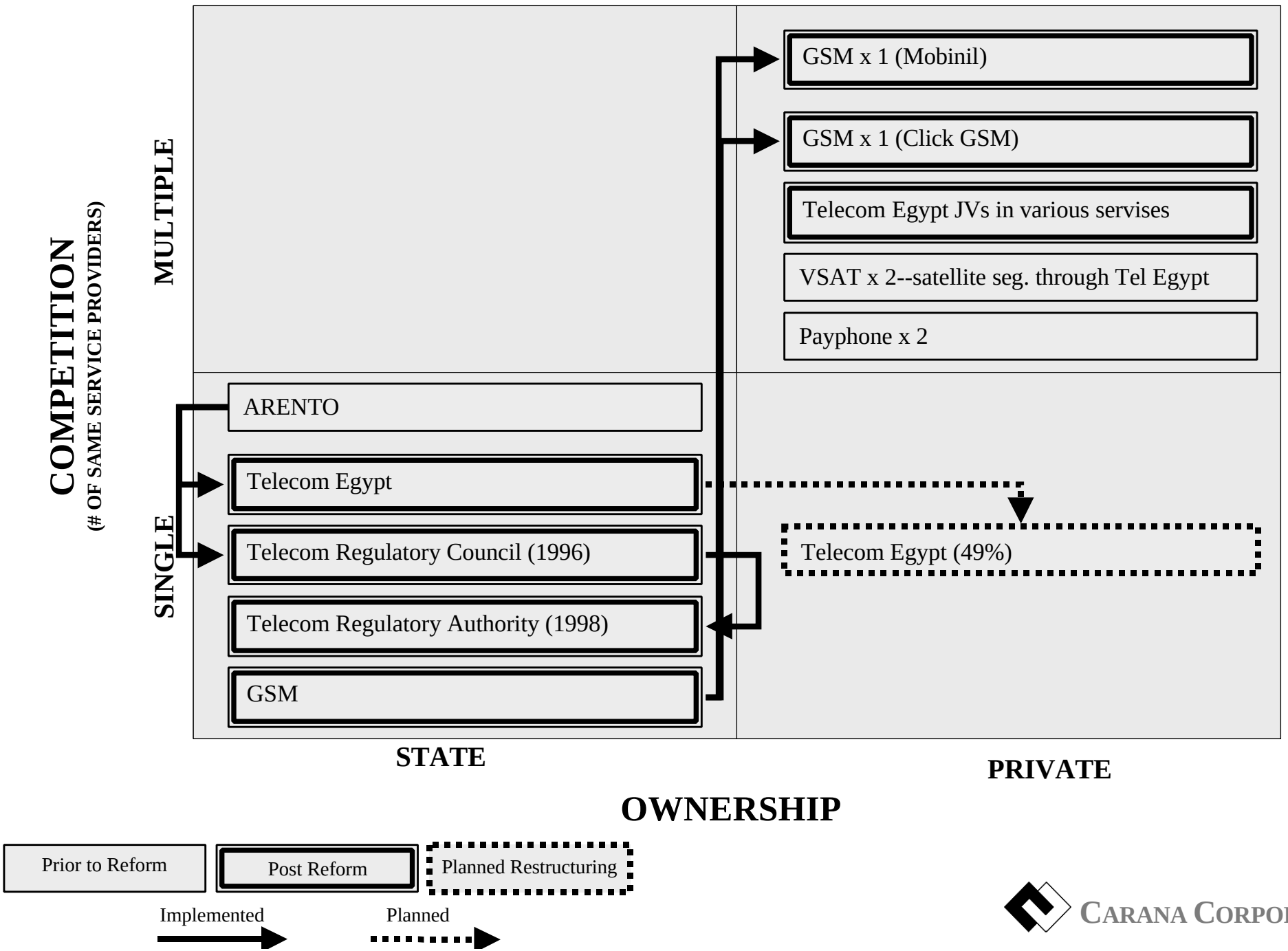
	1981	**1995**	**1996**	**1998**
No. of working lines* (line unit)	408,000	2,785,850	3,068,181**	4,560,000**
Teledensity (%)	0.96	4.63	5.00	9.00
Cities connected to L.D.D. (city)	7	230	251	271
National trunks (trunk)	8,900	100,000	125,000	125,000
Telex lines (line)	3,520	9,340	9,340	9,340
Public (pay) phones (station)	250	4,665	4,692	5,000
Mobile (car) telephone	400	7,500	7,500	7,245
No. of trunk calls (million minutes)	53	1,355	1,634	2,234
International Exchange Capacity (circuit)	160	8,066	8,066	8,066
International channels (channel)	820	8,480	8,480	8,480
Countries with automatic access to Egypt (country)	29	217	234	234

	1981	1995	1996	1998
International traffic volume (million minutes)	28	360	450	564
No. of fax subscribers (subscriber)	0	25,192	27,996	33,100
No. of paging subscribers (subscriber)	0	17,982	31,035	28,800
EgyptNet (packet switched public data network) subscribers (subscriber)	0	1,315	1,506	1,800
Rural service subscribers (subscriber)	0	293	311	520
GSM cellular subscribers (subscriber)	0	0	32,000	190,000

* Number of actual connected subscribers, not installed switch capacities
** Estimated

The following chart on industry structure indicates changes made and those planned, and the path of reforms undertaken.

EGYPT TELECOM: INDUSTRY STRUCTURE



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LESSONS LEARNED/ISSUES RAISED:

The lessons learned in Egypt telecom reform address the issue of sequencing, both in terms of sequence of reform path and the pre-structural reform phase where time and financial resources were spent on capacity expansion.

Sequencing

In Egypt, as in Mauritius and Costa Rica, the approach to improving telecommunications capacity and service, has emphasized commercialization (corporatization) and growth of the state telecom company, followed by limited liberalization (access to new entrants). Privatization is seen as a last, and gradual, phase. There is no question that this approach has resulted in a rapid growth of capacity, albeit from extremely low teledensity and service levels.

The other distinctive feature of the Egyptian approach is that international donors, and specifically USAID, have directly financed much of the expansion and improvement in the system. Given state ownership, and strained government budget, there was little choice but to seek donor financing. It is only in recent years, with gradual liberalization, that private capital has begun to finance growth of cellular and value added services.

This poses a somewhat rhetorical question of whether faster liberalization and privatization would have resulted in significant inflows of private capital. In other words, if USAID had focused sooner on the policy framework (as in the Central American cases), would its investment in telecommunications have been further leveraged with more private investment? Could capacity and service quality have improved even faster? Was this even a viable option in Egypt?

G. CENTRAL AMERICA POWER: El Salvador, Guatemala, Nicaragua

Because of the common themes and issues in the electricity sectors of El Salvador, Guatemala, and Nicaragua, it is possible to look at reform in the three countries as a group. Each country is at different stages of reform, and the approach to reform has differed, providing useful contrasts. Individual results are covered in the in-depth case studies on which these summaries are based.

BACKGROUND TO REFORM:

In the late 1980s, most Central American countries were experiencing serious power shortages compounded by droughts and the war in El Salvador, and their electric utilities were burdened with heavy debts. Weak domestic economies, political and economic risks, and institutional barriers such as government monopolies, all discouraged private investment in the power sectors of Central American countries. However, there was a clear need for a new approach to providing improved electricity services and the recognition of this need ultimately led Central American governments to pursue regulatory reform and restructuring in the power sector. As a result, the past decade has been a period of profound change.

Today, while the Central American countries are at different stages of restructuring, they are striving towards the common objectives of creating open, competitive power sectors that attract private investment and result in improved efficiency and reliability of electricity services. The reform path in each country is briefly summarized below.

El Salvador

In El Salvador, the Comisión Ejecutiva Hidroeléctrica del Río Lempa (CEL), had been responsible for generation, transmission, and distribution since 1945. Restructuring began in 1991 with government initiated studies on the sector's legal and institutional framework, electricity pricing, and privatization of the distribution companies. In 1996, the government passed a new electricity law, which provides for open competition in generation, transmission, and distribution; the commercialization of CEL; and, the development of thermal plants by private companies, without a government concession. (Geothermal and hydro plants require concessions only for the exploitation of natural resources.) Regulatory authority was transferred from CEL to the Superintendent of Electricity and Telecommunications (SIGET).

CEL was unbundled, and its four distribution companies privatized in early 1998. A private grid-connected power plant was installed. More recently, the government announced the division of CEL's generating capacity to stimulate competition and pave the way for future privatization.

Guatemala

In Guatemala, the power sector has been dominated by the Instituto Nacional de Electrificación (INDE), responsible for generation and transmission of power, and distribution in rural areas, and EEGSA, responsible for the distribution of electricity to the state's most industrialized regions of Sacatepequez, Escuintla, and Guatemala City. INDE sells power to EEGSA and 12

municipal distributors. Private participation in power generation has been allowed since the early 1990s.

In 1996, the government passed a new electricity law, which allowed for the unbundling of generation, transmission, and distribution functions, and the creation of an independent regulatory body. Electricity generation is now open to any entity, and private companies have been granted unrestricted access to the power grid and are allowed to participate in electricity distribution. Furthermore, end-users are able to purchase energy directly from generators or commercial vendors, by paying a corresponding toll. In addition to the regulatory body, the Wholesale Market Administrator (WMA) was created to act as an independent system operator in charge of dispatching and managing transactions.

In 1997, Guatemala sold the EEGSA generation units, and in 1998 the EEGSA distribution assets. Current reform plans call for the division of INDE distribution services into two zones, to be sold as separate companies.

Nicaragua

In Nicaragua, the Instituto Nicaragüense de Energía (INE) managed and operated the power sector until the 1990s, when Nicaragua began to formulate plans for restructuring the sector. In 1994, the operations side of INE was segmented and the Empresa Nicaragüense de Electricidad (ENEL) was set up as a commercial company, responsible for generation, transmission, and distribution. INE retained regulatory and planning functions.

In 1998, the government approved a new electricity law which calls for the unbundling of generation, transmission, and distribution, and the creation of a competitive generation market. Nicaragua plans to keep the transmission state-owned. It intends to allow private sector participation in generation and distribution. INE will remain the regulatory body, but will no longer be responsible for planning functions.

USAID ROLE:

In September 1988, USAID, Costa Rica's Intituto Costarricense de Electricidad (ICE) and the Ministerio de Recursos Naturales, Energía, y Minas (MIRENEM) co-sponsored the Central American and Caribbean Electric Power Workshop, held in Costa Rica. The workshop presented information on issues fundamental to private participation in the power sector, including discussions of financing mechanisms, cost/benefit analysis, sugar mill-based cogeneration and contractual questions. More than 130 representatives of national electric power companies and governments in the region attended the workshop.

This workshop seems to have been a crucial event in introducing new concepts at an opportune moment of pressing need and renewed interest in private sector solutions to economic problems. Countries began experimenting with cogeneration, and debating broader private participation. In December 1994, the presidents of the United States and the Central American countries signed the CONCAUSA Declaration. Under the CONCAUSA Declaration, these governments agreed to work cooperatively for the establishment of policy and regulatory frameworks to increase, among other objectives, private sector participation.

As a result of the CONCAUSA agreement, USAID has provided support to Central American countries for the restructuring of their power sectors, including assistance in the development of new regulatory frameworks, the establishment of new, independent institutions, and the privatization of state assets.

USAID support for power sector restructuring was drawn from two primary sources. The first and largest source of funds was the USAID CONCAUSA program directed toward regional economic development and creating free and competitive markets, and implemented through USAID Guatemala/Regional Programs. The initial budget for CONCAUSA activities in the power sector was about $900,000. In addition, the USAID Global Bureau contributed in two ways: first, with smaller amounts of supplemental funding, and second by using Washington-based contracting vehicles for hiring technical assistance personnel for CONCAUSA.

Restructuring support was divided into 4 categories:

1. **Targeted Technical Assistance:** This was directed toward resolving near-term bottlenecks, including both requests for immediate assistance by the governments to realize privatization and support for multilateral development bank (MDB) programmed activities.

2. **Specialized Training:** Training was aimed at facilitating the restructuring process and putting in place essential regulatory agencies, tariff reforms and associated methodologies, etc.

3. **Regional Information Interchange:** Experience sharing through such vehicles as "study tours" in Latin America to gain first-hand knowledge and to meet counterparts who had faced and overcome similar restructuring issues. Labor and political opposition groups, whose support was critical to ensure the consensus needed for reforms, also participated in these interchanges.

4. **Policy Dialogue:** Policy dialogue aimed at encouraging sound policy making by discussions and analysis with high-level government officials.

Stakeholders interviewed for the Central America power studies noted that USAID assistance was timely and effective. USAID support to the individual countries is covered in the in-depth case studies.

ROLE OF OTHER DONORS:

In El Salvador, the IDB has provided power sector loans for institutional strengthening. The World Bank provided a power sector restructuring loan for the segmentation of CEL and for assistance with policy and economic studies (including quality of service, calculations of losses, etc.).

In Guatemala, the IDB and the World Bank were involved in drafting the electricity law, utility segmentation, power pool sub-regulations, and strengthening of institutions.

In Nicaragua, the IDB and FOMIN funded the initial development of the first draft of the Electricity Law, and segmentation of the utility. The IDB has concentrated its support on capital asset acquisition and associated legal and institutional reform.

PRIVATE SECTOR INVOLVEMENT:

As the power sectors in the three countries opened to competition and privatization, the private sector has played an increasing role through IPPs (independent power producers) and privatization. In each country, an initial objective was to increase the electricity supply, and emphasis was accordingly given to encouraging private investment in generation capacity. A second objective was to encourage greater efficiency of the existing system by unbundling and privatizing generation, distribution, and in some cases, transmission assets.

The role of the private sector is summarized for each of the three countries.

El Salvador

Generation:

- El Salvador introduced a grid-connected private power plant--El Nejapa, which now accounts for about 15% of El Salvador's installed capacity.
- In June 1998, CEL announced the division of its generating capacity into four separate companies (2 thermal, 1 hydro, and 1 geothermal), paving the way for future privatization. The thermal plants are scheduled to be privatized in late 1998 followed by the privatization of hydro plants in 1999. A concession for a geothermal plant was to be offered in late 1998.

Distribution:

- The four distribution companies were privatized in January 1998, with majority stakes to foreign consortia for a total of $586 million.

Guatemala

Generation:

- In the early 1990s, Guatemala began allowing private power producers to sell electricity to INDE and EEGSA. By 1997, private power producers accounted for one-third of Guatemala's installed capacity. Private investors currently active in Guatemala include Enron, TECO Power, and Constellation Power, a number of sugar mills and a Guatemalan company. TECO Power operates the 78 MW "La Alborada" power station located in the Department of Escuintla in the Pacific Coast region of Guatemala. TECO is also constructing Guatemala's first coal-fired power plant, a 120 MW facility near the port of San José in the Pacific Ocean, which is scheduled to begin operations in 2000.

- In 1997 Guatemala sold EEGSA's two generation units to a consortium headed by Constellation Power. Constellation Power secured a power purchase contract that guarantees a market for 80 MW for three years and 150 MW for an additional 15 years.

Distribution:

- In 1998 EEGSA's distribution assets were privatized for $520 million. The winning consortium gained ownership of 80% of EEGSA; a further 16.1% will be sold through a stock issue on the local exchange.
- INDE's distribution assets were privatized in December 1998.

Nicaragua

Generation and Distribution:

- One private power plant rated at 30 MW (total cost about $37 million) has been constructed and is in operation, and two additional private power plants in the range of 50 MW are approved.
- Intentions are to privatize ENEL generation and distribution resources.

RESULTS OF REFORM:

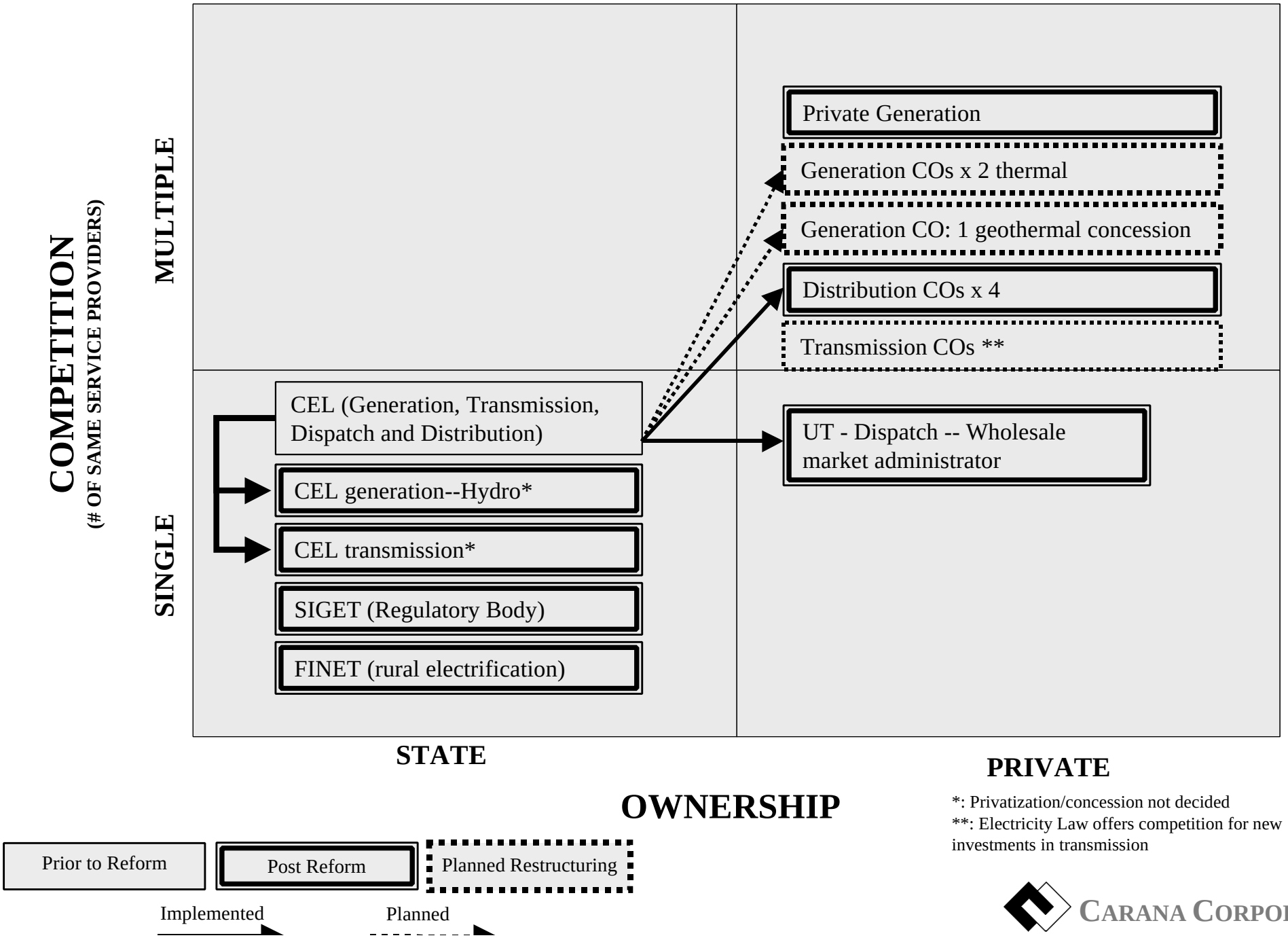
Structural changes in the power sector are shown in the attached figures and the results achieved to date for each country are summarized below:

El Salvador

- In October of 1996 a new electricity law was passed that authorized the privatization of the distribution utilities. The privatization of 4 distribution entities under CEL as well as the distributor DEUSEM, occurred in 1998. The sale produced $586 million for the government. Private distribution now supplies some 850,000 customers and 96% of the power consumed.
- One major new private power facility with a capacity of 140 MW was built, the Nejapa thermal plant. This plant supplies about 15% of the national power demand.
- Tariff policy has also been revised and tariffs are now being gradually adjusted to reach full marginal cost.
- Wholesale power market transaction management (economic dispatch) has begun with establishment of a "Unidad de Transacciones".
- The Superintendent of Electricity and Communications (SIGET) has been created as a regulatory entity and has begun to function.
- The national generation and transmission utility CEL has not been privatized at this time, but a privatization plan is being prepared by CEL's board for legislative approval.

The following chart on industry structure indicates changes made, and the path of reforms undertaken.

EL SALVADOR POWER: INDUSTRY STRUCTURE



*: Privatization/concession not decided
**: Electricity Law offers competition for new investments in transmission

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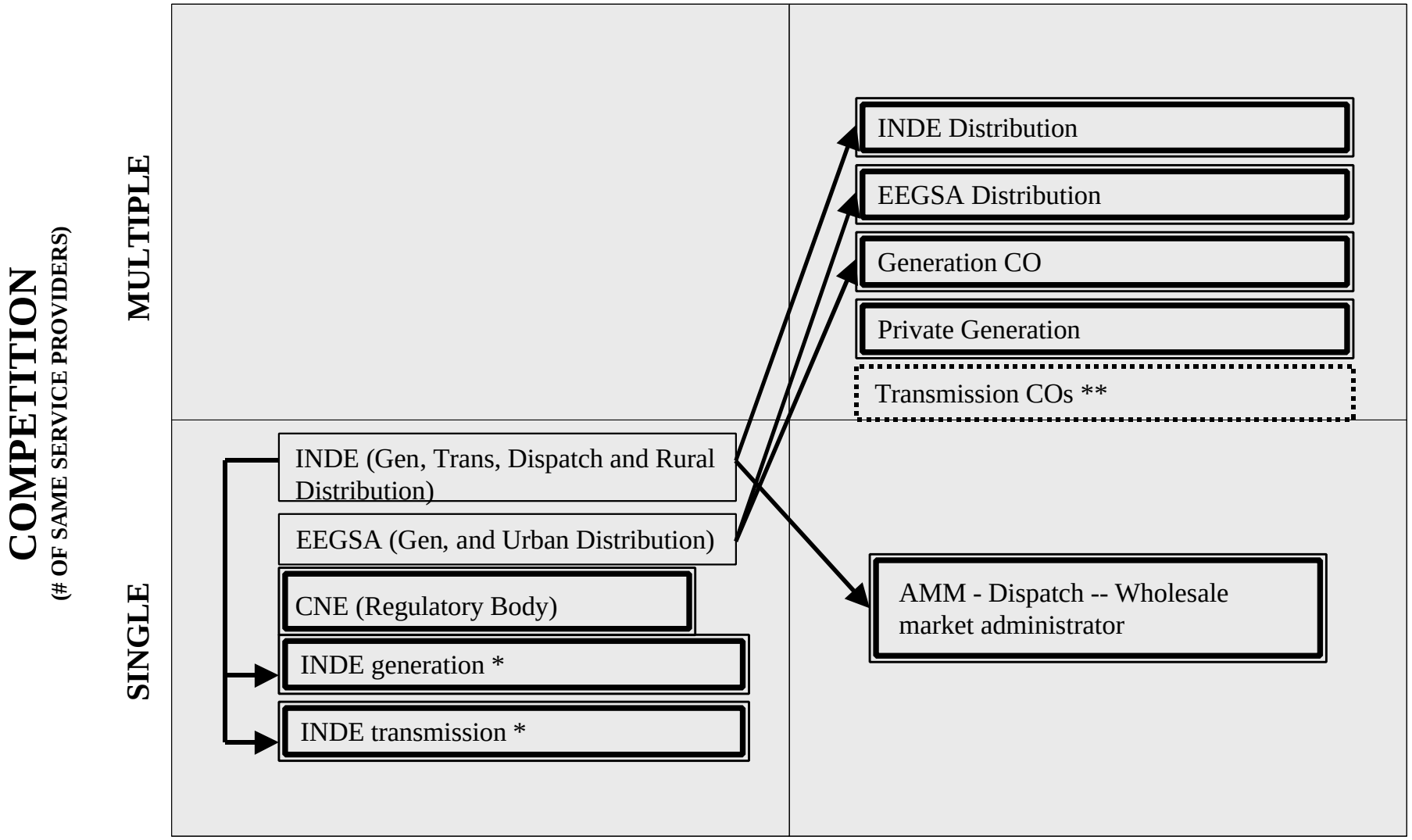
Guatemala

- In INDE, the main state-owned utility, restructuring was begun with reengineering of the generation and transmission operations, and followed by reorganization into generation, transmission and distribution entities for privatization. Actual distribution privatization is scheduled for December 1998.
- The distribution system of the largest utility EEGSA (responsible for the distribution systems for major urban areas such as Guatemala City) was successfully privatized by a $520 million sale to international bidders in July of 1998. The proceeds far exceeded those that the GOG had anticipated.
- EEGSA generation was sold in August of 1997 for $30 million. In addition the purchasers made a commitment to supply 120-150 MW of additional private power at an average price of 5.199 cents/kWh, as opposed to the previous price of 7.4 cents/kWh.
- Finally, the wholesale market and electrical dispatch center for Guatemala has been established.

The following chart on industry structure indicates changes made, and the path of reforms undertaken.

GUATEMALA POWER: INDUSTRY STRUCTURE



*: Privatization/concession not decided
**: Electricity Law offers competition for new investments in transmission

Prior to Reform | Post Reform | Planned Restructuring

Implemented → Planned ⋯→

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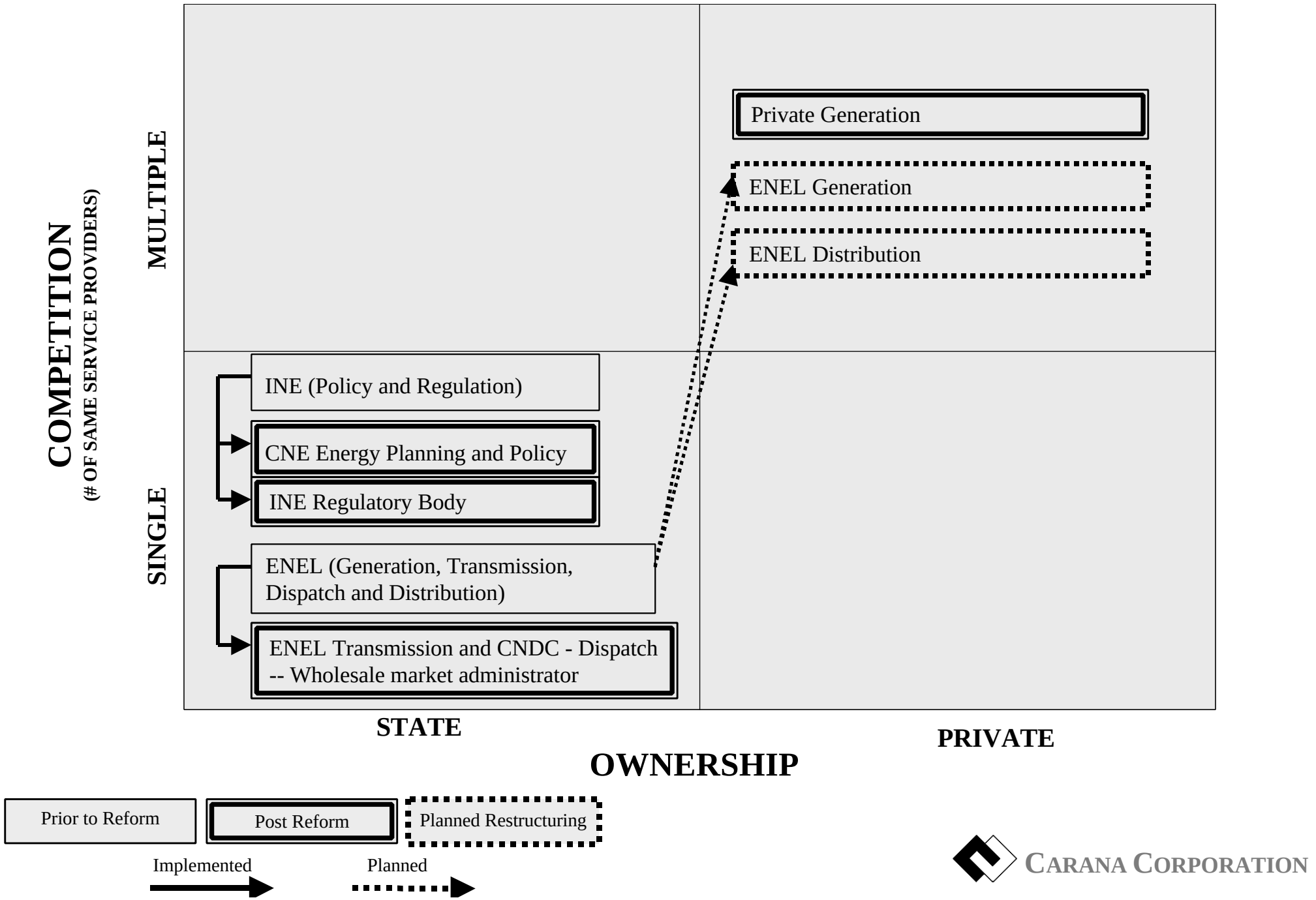
Nicaragua

- Reforms have resulted in the transfer of power supply and distribution functions from the Instituto Nicaraguense de Energía (INE) to a separate power company ENEL. INE retains the energy sector regulatory responsibilities. The GON has also created a national energy commission (CNE) as the policy making body for the energy sector.
- One private power plant rated at 30 MW ($37 million) has been constructed and is in operation, and two additional private power plants in the range of 50 MW have been approved for construction.
- Plans to privatize ENEL are being prepared.
- A national dispatch center to manage power sales in the new competitive market is being developed with IDB and USAID support.

The following chart on industry structure indicates changes made, and the path of reforms undertaken.

NICARAGUA POWER: INDUSTRY STRUCTURE



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LESSONS LEARNED/ISSUES RAISED:

The main broad lessons learned in power sector reform in the three Central American countries have to do with sequencing and private sector investment. Many more process-oriented issues were identified as well, and these are covered in the in-depth country case studies.

Sequencing

The sequencing issue in this case addresses not so much the order of commercialization, liberalization and privatization, but rather the individual activities that take place during these phases. All three of the countries have implemented (or plan to implement) liberalization, commercialization and privatization phases, leading to open and competitive power sectors. Developing an effective regulatory capacity is perceived as an essential element of this process, but has proven difficult to implement. Substantial effort is still required in Central America to create adequate regulatory capacity to oversee the restructured power systems in each of the three countries. Furthermore, since each country is at a different stage in developing this capacity, a great deal can be gained from intensifying regional exchange of experience.

Rural electrification and service is an issue which has emerged in these countries. The question is whether and how the restructured industry will deliver service (at low cost) to rural populations. Some countries continue to assume that the government must play a major role in ensuring rural service, while others are trying to create market incentives for private firms.

Private Investment

Private investment can be attracted into all aspects of the industry (including new and existing capacity) without necessarily increasing rates to users. This is a significant result, given that these are relatively small and poor countries.

H. PHILIPPINES POWER

BACKGROUND TO REFORM:

Since the 1970s, the National Power Corporation (NPC) has been responsible for generation/transmission facilities in Luzon, Visayas and Mindanao. Distribution is primarily private, with electric cooperatives, and private utilities, as well as local government, authorized to distribute electric energy. Competition is constrained by the fact that distribution is dominated by one large (private) company on the Island of Luzon.

In the mid 1980s the Philippines underwent a radical change in Government that was to affect every sector of the economy, but none so dramatically as the power sector. During this period, the essential services provided by the NPC were virtually ignored: new power plant construction and rehabilitation of existing generating facilities was minimal, investment in the sector all but ceased, the former Ministry of Energy was downgraded to an administrative level office that was ineffectual, and regulatory oversight was relegated to a rubber-stamp agency with limited capability or authority.

By the late 1980s, the NPC was financially bankrupt (and thus unable to get loans), plants were operating at low efficiency, power brownouts and blackouts were commonplace, sometimes approaching 12 hours per day, and the economy as a whole was suffering. In 1990, a survey by the Government identified the power crisis as the Country's number one economic problem and the largest deterrent to attracting offshore investment in the Philippines.

In 1987, recognizing that it had neither the resources nor the capacity to quickly remedy the situation, the Government of the Philippines (GOP) reacted by passing emergency legislation which allowed the entry of the private sector through BOT schemes to fund, construct, and operate power generation facilities throughout the country, while NPC remained the sole buyer. This "fast track power development program" worked well and the GOP successfully developed a legal and institutional framework that was conducive to offshore developers. In fact, the Philippine program became a model for other ASEAN countries and the Philippines quickly moved from lagging in power sector reform, to becoming a leader in the region. By 1993, the power supply/demand situation was largely remedied and the country enjoyed stable and reliable power supplies once again.

The program did come at a cost, however, namely in the relatively high power rate structure required to attract private investment. In the first power plant BOT scheme, Hopewell benchmarked the selling rate at the (high) NPC grid rate prevalent at that time. This grid rate reflected the inefficiencies in the power system, but became the benchmark utilized by other BOT schemes. The Philippines thus maintained some of the highest power rates in Asia. Rates began to come down in 1995, as investor comfort levels rose, leading to oversubscription of BOT tenders. Interested investors began proposing rates below the NPC grid rate.

At the time of the power crisis policy makers did examine the possibilities for generation/transmission efficiency gains, as well as end-use efficiency. In fact, USAID funded a

power plant efficiency study, and the recommendations of this study were incorporated into the power development program. It also funded a program on end-use efficiency. However, efficiency improvement efforts did not prove sufficient to solve capacity problems, and greenfield plants built through BOT schemes became the best option for making up capacity in a short period of time. Later in the reform process, the GOP put out ROOs (Rehabilitate-Own-Operate) tenders, but only a few of these proved lucrative. Most of the plants were too run down to make rehabilitation a feasible option.

In the late 1990s, the Philippines is again facing rapid growth of demand in the power sector. In 1996, the country's generating capacity of about 10,556 MW (hydro 22%, geothermal 13%, and oil 51%), was projected to require expansion by 12,978 MW to a total installed capacity of 23,264 MW by 2005. This high annual rate of growth in demand has made it essential for the GOP to seek alternative sources of financing and development of power generation.

The Government of the Philippines (GOP) forecasts a need for roughly US$1.4-1.8 billion per year in capital for investment in the power sector during the next 10 years. In the past, debt was used for financing of major power generation and transmission projects. This source of financing is inadequate for the scale of development required in the future, and the NPC can ill afford to assume any additional debt given its shaky financial situation. Restructuring of the power sector is designed not only to address this immense capital requirement, but to help reduce electricity rates which are the second highest in Asia, and relatively high in comparison with international standards. Restructuring would realign prices by increasing competition and mobilizing market forces, thus overcoming the dominance of government in power supply and fragmented and financially unsound distribution.

Power sector restructuring which would involve substantially greater participation of the private sector was proposed in the Energy reform Act of 1992 and formalized in December 1996 with Proclamation No. 50. This proclamation mandated the government to promote privatization through an orderly, coordinated and efficient program for the prompt disposition of the large number of non-performing assets of government financial institutions, and certain government-owned and controlled corporations. Proclamation No. 50 created the Committee on Privatization (COP) to take the lead in divestment activities and dispose assets in such as way as to generate maximum cash recovery for the government. Legislation is expected to pass in 1999.

USAID ROLE:

AID has sponsored a wide variety of activities which have assisted the energy sector in the Philippines. It is difficult to separate those which are entirely and/or partially related to power sector restructuring. For example, energy efficiency improvements, such as those supported by the Demand Side Management Project, contribute to achieving the goals sought from sector restructuring, although the project was designed to focus on other objectives. Other inputs such as the Global Bureau Energy Training Program have contributed directly to restructuring through development of local capacity to support reform policy, but has also supported capacity building unrelated to sector restructuring.

In the 1970s, AID devoted significant resources to rural electrification. AID continues to assist in this area, and is currently in Phase III of the rural electrification project. Other AID assistance has focused more on private power development assistance; studies on restructuring and privatization; regulatory reform; energy efficiency, technology transfer, climate change; demand side management. Assistance has been provided through ongoing training and study tours. Some of the energy related projects are highlighted below.

- **Philippines Climate Change Mitigation Program (PCCMP):** This program which began in 1998, supports power sector reform**,** addressing such topics as clean fuels use, generation efficiency, and comprehensive planning including efficiency and environmental considerations. The effectiveness of the project in meeting its strategic goals and its quantitative intermediate targets (results) will be determined by the quality of greenhouse gas (GHG) mitigation projects chosen and their efficient implementation and replication.

- **Policy Formulation:** AID, through Global Bureau assistance to the Mission in 1994, successfully worked with the DOE and NPC, as well as other stakeholders, to produce a recommended power industry restructuring report. The report emphasized the unbundling of generation and transmission activities into more efficiently sized units; the introduction of competition in planning and investment in projects as well as dispatch and sales; the provision of an incentive program to encourage small utilities to consolidate; the promotion of private investment; and, support for transparency in regulation and sound pricing of electricity. Another study subsequently funded by AID in 1996 ("Study of Options for Restructuring the Distribution Sector"), evaluated the feasibility, effectiveness and financial benefits of consolidating electric cooperatives. These studies are considered to have been vital in helping shape thinking on sector restructuring.

- **Utility Partnership Program:** The purpose of this assistance was to establish long-term cooperative relationships between US electric utilities and Philippines counterparts. The orientation of these relationships was toward improving the efficiency of electric power generation and distribution, as well as toward reform and restructuring of the industry. AID provided limited financial assistance to facilitate establishment of contacts and travel.

- **Participating Agency Support Agreement (PASA) between USAID and DOE:** Limited restructuring assistance has been provided in power sector related topics through the PASA agreement with DOE in 1996 and 1997 through study tours and workshops.

- **Energy Training Program:** Another significant area of power sector restructuring assistance involved training through the Asia Sustainable Energy Initiative (ASEI) Energy Training Program. The main areas addressed were demand side management, energy economics and finance, energy efficiency in buildings, IRP and renewable energy. This project was initiated in February 1996 and was funded at $250,000.

The Philippines AID Mission has also relied on a variety of non-traditional vehicles to support electricity sector restructuring and related needs. These vehicles have included Global Bureau programs of training, the Energy Efficiency Project, USEA Utility Partnership Program, and DOE PASA. These have supported many diverse inputs including study tours, targeted training abroad,

and some in-country workshops on restructuring-related topics, utility to utility interaction, and others.

ROLE OF OTHER DONORS:

Other donors have been involved on demand side management and integrated resource planning (IRP), transfer pricing studies, pricing and regulatory reform, and rural electrification.

The US Department of Energy has been involved in specific activities, US private utilities have engaged in executive and staff visits to exchange information and explore opportunities for Philippines investment, and policy makers and experts from a variety of foreign countries have shared experiences with the Philippines. This diverse participation has been important not only to expand resources available, but also to add technical and policy perspectives which would not have been feasible with a narrower approach.

The Asian Development Bank (ADB) and World Bank (IBRD) have also been participants, along with other donors, in supporting different aspects of restructuring. The IBRD sponsored the 1994 Philippines "Power Sector Study - Structural Framework for the Power Sector," which paralleled one of the AID reports and was consistent with its recommendations. The ADB commissioned a panel of experts in 1998 to review the plans for restructuring and offer recommendations, and has proposed technical assistance projects in the areas of: natural gas industry creation and regulation and regulatory practices in competitive power markets.

AID has coordinated with institutional initiatives of the multilateral development banks (MDBs) in the Philippines. As an example, AID is now defining a program of short-term technical assistance in cooperation with the ADB, to help the DOE fulfill its role as a policy making body for reform, and fulfill conditions which the Asian Development Bank negotiated with the GOP pertaining to a major restructuring loan.

AID's traditional role vis-a-vis the MDBs has changed over the last few years. AID is finding itself increasingly asked to provide key grant assistance to support effective implementation of MDB loan programs and associated reform initiatives. This is the result of several factors, including AID's strong on-the-ground presence, AID's ability to provide grant funds, limited availability of MDB grant funds, and the time consuming process to access MDB loan funds for technical assistance. In addition, since NEDA has a long-standing policy of preventing loan funds from being used for direct technical assistance, AID fills an important requirement in the total assistance arena. AID's ability to respond to these needs has been enhanced in recent years as AID has become more efficient in programming funds, redesigning projects and reprogramming funds. The result is that AID can play a more central role as a facilitator of policy formulation and agent of change.

PRIVATE SECTOR INVOLVEMENT:

Distribution has always been handled largely by the private sector. Restructuring efforts have focused on opening generation up to the private sector. Enactment of the BOT Law (Republic Act No. 6957) in 1990 paved the way for the country's first privately financed BOT project, the

210 MW Hopewell gas turbine power generating facility. The fast-track completion of private power projects enabled the government to mitigate the Philippines "power crisis" of 1993. By 1998, about 22% of total capacity was supplied by private developers.

RESULTS OF REFORM:

Reforms have resulted in a significant level of foreign investment in IPP projects, and the development of adequate generation and reserve capacity to alleviate short-term supply problems. On the policy side, draft legislation has been prepared for restructuring and privatization. The structural implications of reform are illustrated in the attached figure.

The functions among Government agencies are being separated, and the regulatory body strengthened. Subsidies are being gradually eliminated. The basis of a competitive power market is being established through open access.

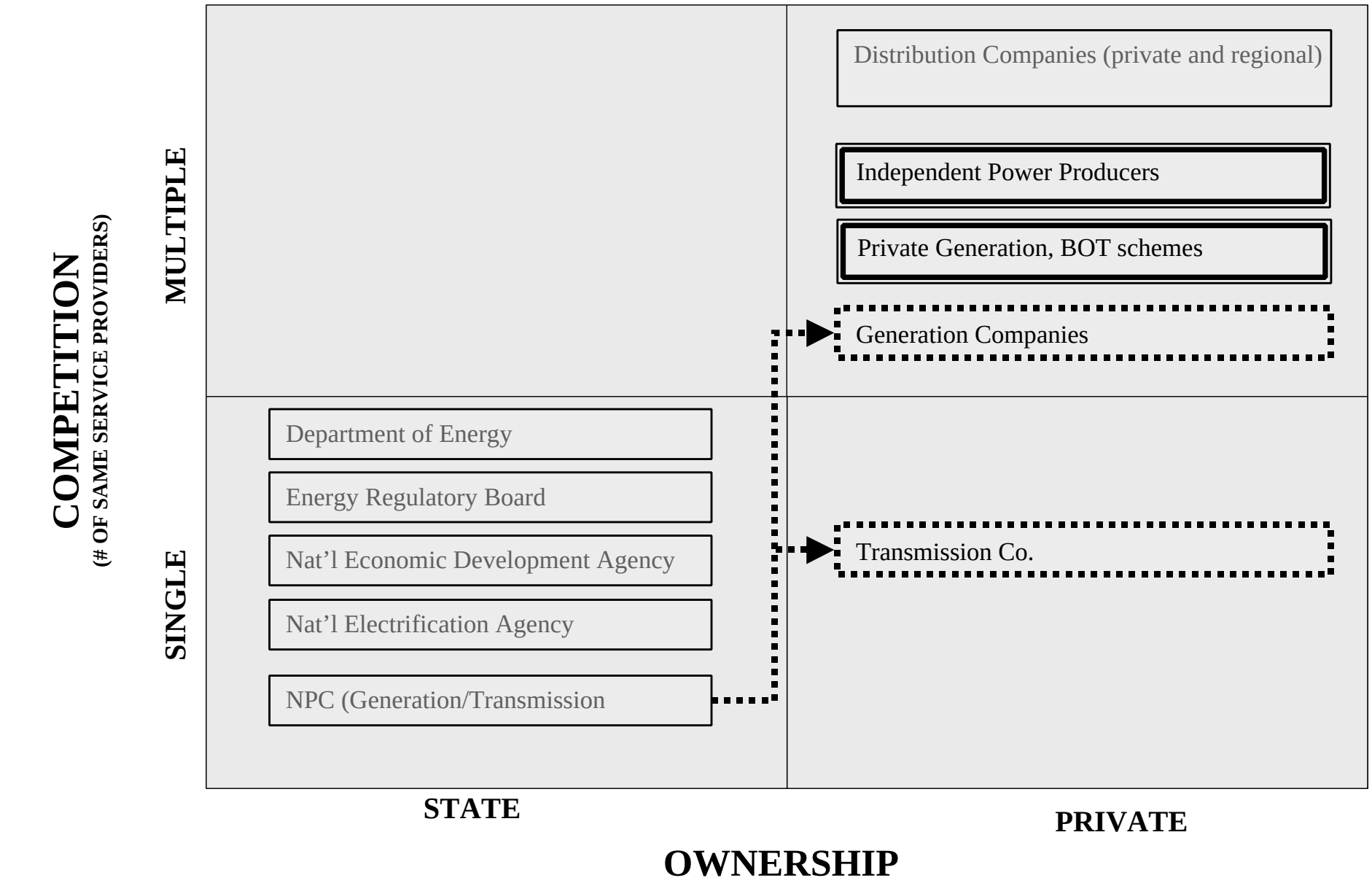
It is possible to note progress in the table below:

RESULTS OF REFORM:

Category	**Pre-Reform**	**Post-Reform**
Blackouts:	Daily – up to 12 hours (late 1980s)	Infrequent
Reserve Capacity:	None	300MW (Minimum)
Capacity Additions:	561 MW (1986-1989)	3,457MW (1991-1995)
IPPs:	None (1989)	19 (1996)
Energy Agency:	Office only	Department
Regulatory Agency:	Weak	Strengthened
Pricing:	Bundled	Unbundled
Restructuring & Privatization Legislation	None	Bill before the Senate
Price Reform:	None	Elimination of many subsidies, elevated demand charge, multi-tariffs
Open Access:	None	Begun

The following chart on industry structure indicates changes made, and the path of reforms undertaken.

PHILIPPINES POWER: INDUSTRY STRUCTURE



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LESSONS LEARNED/ISSUES RAISED:
Among the main issues raised in the Philippines power sector case, factors precipitating reform (catalyst to reform), the sequencing of the process, and the approach taken by USAID are particularly interesting.

Catalyst
The principal catalyst to reform was the crisis in power supply financing sources for generation. To deal with the crisis immediately, the government adopted the "fast track power development program," with an eye on the near term future.

Sequencing
The model adopted to deal with the immediate crisis focused on attracting private investment in new capacity through Independent Power Producers (IPPs), thus opening the sector to private participation alongside the state-owned and run NPC. This liberalization phase has been lengthy, and has not benefited from consistent, strong regulation. Privatization is slated to eventually take place. The course of events, and high power prices, raise the issue of whether privatizing NPC generation prior to, or simultaneously with bringing in IPPs could have improved the pace and impact of power sector reform.

Timing of USAID Assistance
The USAID mission has had a clear vision for power sector development in the Philippines, but its vision was not always in synch with that of the GOP. USAID substantially decreased assistance in the power sector from 1990-1992, because it did not believe the GOP was taking a coherent approach. (Indeed there was no high level energy planning body, and no direction in the sector.)

USAID assistance in developing the IPP program, laid the ground for further power reform under the Ramos administration. By the time Ramos came to power in 1992, recovery in the sector was well underway, and the new administration was able to capitalize on this, creating a Department of Energy and developing a coordinated energy plan.

I. MALAWI RAIL

BACKGROUND TO REFORM:
The Malawi economy was destabilized by the long civil war in neighboring Mozambique, and has continued to worsen over the past decade. Malawi is a landlocked country, and as such is highly dependent on transportation outlets through neighboring countries. Prior to 1981, the majority of imports and exports were transported by rail through Mozambique, using the ports of Beira and Nacala. The civil war in Mozambique disrupted rail transportation, and Malawi was forced to use alternate routes, going through Durban in South Africa and north to Dar es Saalam. This diversion increased transport distances by up to 300%, while transport costs have reached as high as 41% of the total landed cost of imports and exports (reportedly giving Malawi the distinction of having one of the highest transport costs in the world).

With strong donor support, Malawi Railways has gone through a restructuring and commercialization process, from which emerged two companies: Malawi Railways 1994 Ltd (MR 1994), and Malawi Lake Services Ltd. A privatization tender process for MR (1994) is nearing completion. The tender was for a single concession, allowing for 100% sale of MR 1994's moveable assets and a lease of the permanent way.

Liberalization in the railroad sector has taken place indirectly insofar as trucking is now competing with rail for business. Interestingly, many of the former rail employees have gone into the trucking industry, illustrating that this mode of transport is growing. A regulatory authority to provide oversight of the rail transport sector is presently being developed.

USAID ROLE:
The USAID Malawi Railways Restructuring Program is a component of the Regional Railways Restructuring Program. The goal of the regional program is to enhance the environment for increased trade and investment in the Southern African Development Community (SADC). The objective of the Malawi Railways program is to enhance the environment for agribusiness in the country by reducing the surface transport costs on smallholder inputs and export crops through increased rail efficiency and inter-modal competitiveness.

The USAID Malawi Railways Restructuring Program consists of $20 million in Non-project assistance to be disbursed in three tranches and $5 million in project assistance. (The GOM was obliged to make a counterpart contribution of not less than $7,500,000.) The USAID non-project assistance program was developed to assist the Government of Malawi to accomplish three objectives:

1) Improve the efficiency and reliability of the Nacala Corridor;
2) Restructure, commercialize and (eventually) privatize Malawi Railways;
3) Formulate a transport policy that fosters a sound environment for commercially viable transport businesses.

The NPA is structured in three tranches to be disbursed upon meeting specific conditions. It should be noted that USAID does not check how the money has been spent. Rather it checks results, conducting a qualitative assessment on changes and improvements in the sector. The key conditions for disbursement are summarized below.

1) $5 million upon restatement of the commitment to restructure and privatize Malawi Railways, and submission of plans for the next steps. This was deemed to have been accomplished and the disbursement was made.
2) $7 million upon completion of the steps identified for the first tranche, and submission of a plan for final action, including privatization and reworking of the legal framework for transportation. This was deemed to have been accomplished and disbursement was made.
3) $8 million upon completion of privatization or concessioning of Malawi Railways (1994), development of a mechanism for leasing the permanent track to the concessionaire, and drafting of amendments and revisions to transport policy legislation and regulations. The tender is in the final stages, and focus is turning to transport policy.

The $5 million of project assistance, consisting of technical assistance, training, analytical studies, and procurement of computer equipment, is designed to assist the Government of Malawi in implementing the above three activities. To date, computers have been installed, audits brought up to date, and the valuation issue addressed.

ROLE OF OTHER DONORS:
The World Bank has funded privatization advisory services to the Privatization Commission for MR (1994). It has also provided assistance on restructuring of the spin-off company, Malawi Lake Services Ltd., and procurement of physical assets for revitalizing the Nacala Corridor.

Multiple donor organizations have been involved in supporting development of SADC transport systems that might have a spillover effect on Malawi.

PRIVATE SECTOR INVOLVEMENT:
The private sector has been involved in the rehabilitation of the Malawi railways. For example, Union Transport, the biggest shipping operator in Malawi, was instrumental in getting movement going again on the Nacala line in the early 1990s, for which it set up a company, Trans Nacala Ltd.

Additional private sector involvement will come principally from the concession of MR (1994), for which bids have been submitted by three foreign entities.

RESULTS OF REFORM:

The main results achieved to date have been the restructuring of Malawi Railways, and commercialization. Commercialization has not resulted in significant quantifiable results in terms of financial and operating performance. Increased competition has occurred by default from the trucking industry, rather than from a deliberate liberalization policy. Malawi is in the final stages of awarding a concession for MR (1994).

LESSONS LEARNED/ISSUES RAISED:

The main issues raised in the case of Malawi Rail relate to the type of USAID assistance, impact of USAID assistance, and sequencing.

Type of USAID assistance

In the case of Malawi Rail, USAID has relied heavily on cash transfers linked to policy and restructuring targets. Some of the stakeholders interviewed for this study believed there was a need to better direct and prioritize the utilization of the cash received by the government, claiming that the NPA needs to be more closely monitored. The large amounts of cash involved ($20 million if all targets are met) raises the issue of when and how non-project assistance is most effective.

Impact of USAID Assistance

USAID has sought increased cooperation between the Malawi and Mozambique railroads. Because of geography, transportation costs in Malawi are highly dependent on access to the Nacala corridor. Cooperation between the two sides, while improved, remains an issue in efficient operations of MR (1994). This fact raises the question of how USAID can help to stimulate better regional cooperation. Can USAID be doing more through its regional programs?

Sequencing

A fairly lengthy commercialization phase was undertaken prior to the concessioning of MR (1994). The impact of this commercialization is questionable, raising the issue of the benefit of pre-privatization restructuring. Some officials believed that it would have been best to skip the commercialization phase and privatize immediately, arguing that it did not make sense to spend valuable resources on commercialization and restructuring only to sell MR (1994) at a later point. This raises the question of the circumstances under which it make sense to go through a commercialization phase prior to privatization.

J. LVIV VODOKANAL (Municipal Water in Western Ukraine)

BACKGROUND TO REFORM:

Under the Soviet system of central planning, capital investments in water/wastewater systems were planned and funded by the Central Soviet government in Moscow. Design was performed by a centrally controlled State Design Institute. Construction was performed by a centrally controlled State Construction Enterprise. The completed project was handed over to the local vodokanal (water/wastewater utility) which took on responsibility for operations and maintenance only.

With the breakup of the Soviet Union, central planning degenerated, and the Ukrainian economy (as most of the others) collapsed. Enterprises quickly stopped paying their debts, and the Ukrainian government also fell rapidly into debt and experienced difficulty in importing the energy necessary for running infrastructure and production enterprises. No longer able to finance capital repair and investments, the Ukrainian national government was devolving responsibility for water and wastewater to the local level. Decentralization of the vodokanal system was taking place by default, and without guidance or support to the regions.

The municipal water system in Lviv serves about 850,000 people. It is an old system with some of its initial piping having been installed 100 years ago. After the second world war, the system was greatly expanded to meet growth in the 1960s and 1970s when the city tripled in population. By the 1990s, it was typical of many of the municipal water systems in the Former Soviet Union. Its basic design was adequate but the materials and equipment were worn as a result of the poor quality of materials used, inadequate capital investment, and lack of routine replacement of parts over the last 20 years. The Lviv Vodokanal was suffering inordinate water losses through leaky pipes, and water distribution under full pressure was restricted to about six hours a day. The Lviv municipal water utility was severely impaired both physically and institutionally.

USAID ROLE:

USAID approached municipal water reform in Ukraine on a regional basis, beginning with the city of Lviv. USAID approached the restructuring of Lviv Vodokanal from two angles: 1) strengthening local government institutions; and 2) environmental policy and technology. In keeping with these two Agency interests, USAID launched two projects directed at improving the Lviv Vodokanal: the Lviv Vodokanal Project, and the Urban Water Management Demonstration in Lviv project. These two efforts were closely coordinated.

A third project was launched in 1996, when USAID agreed to sponsor the Program to Support Sustainable Development in Ukraine, also through its Environmental Policy & Technology (EPT) project. This program had a component which focused directly on vodokanals. The objective of the Program to Support Sustainable Development was to integrate environmental issues with economic development in Ukraine.

USAID has had 5 basic policy goals for the Lviv Vodokanal project. As described in one contractor's (PADCO) final report, the project was to demonstrate:

1. "the feasibility of communal service pricing reform to achieve full cost recovery;
2. the potential for attracting investment in the vodokanal for significant system improvements;
3. the feasibility of increasing the degree of local control over vodokanal operations;
4. the replicability of communal service pricing and institutional reform for other state-owned utilities and in other geographic regions of Ukraine;
5. USAID's response to local priorities."

The second USAID initiative, financed under the EPT project, consisted of both technical assistance and procurement funds. Technical assistance was provided in the form of analysis of vodokanal operations and institutional setup, developing guidelines for the vodokanal to conduct self-assessments using economic analysis, developing and implementing a demonstration project, developing recommendations, as well as coordinating the effort with PADCO. In addition, $1.59 million worth of equipment and materials was procured for the demonstration project.

In 1997, a pilot roll-out program was introduced using USAID contractor trained staff from Lviv to work with other vodokanals on conducting assessments of their operations. Training of vodokanal staff focused on making and analyzing measurements in their system, energy efficiency, understanding their financial status and making long range investment strategies.

ROLE OF OTHER DONORS:

The World Bank has been actively involved in projects supporting the reorganization of Lviv Vodokanal. World Bank studies indicated that the problems in water and wastewater service delivery were due not to lack of capacity, but rather to operational and institutional factors as well as a lack of access to funds for capital repairs. Progress on the World Bank loan slowed when the city of Lviv originally was unwilling to consider management contracts or concessions: the World Bank was hesitant to deliver a loan to the vodokanal in its poorly defined organizational state. The World Bank believed that without one organization responsible for the loan, the money would simply disappear.

USAID and the World Bank coordinated their activities closely. By picking up the engineering and project design work, USAID allowed the World Bank to continue with the project preparation. The World Bank funded a number of contracts to provide technical assistance in helping prepare the Lviv Vodokanal and the city for the loan. The World Bank has recently invited Lviv Vodokanal to negotiations.

In addition to World Bank involvement, the Danish Environmental Protection Agency provided a grant for a consulting company (COWI) to study the physical and financial aspects of the vodokanal in parallel with the USAID team. The Danes focused on the wastewater system, while the USAID team focused on water.

The Peace Corps also played a role, with a volunteer assisting the Lviv Vodokanal with bookkeeping and accounting system improvement.

PRIVATE SECTOR INVOLVEMENT:
The Lviv city government recognized the need to involve external sector financing in the rehabilitation and improvement of the vodokanal system, and it approached the World Bank. The Bank is prepared to offer a loan provided that the utility is transformed into an independent entity that can take responsibility for repaying the loan. The planned restructuring of the vodokanal will eventually involve the private sector through a management contract for operating the system. The initial phase will not involve private sector investment in the physical plant.

RESULTS OF REFORM:
Results achieved in the reform process of the Lviv Vodokanal are intermediary steps along the path to receiving the World Bank loan. Thus far, institutional reforms have been initiated, the city of Lviv and the vodokanal have a better grasp on how to operate a utility, and physical improvements have been introduced through the demonstration project. (In addition. new Western technology has been tested in the demonstration project.)

The projects have allowed USAID to test 1) its response to local (regional) priorities, 2) the feasibility of increasing local control over infrastructure projects, and 3) the replicability of the assistance "package" to other municipal water systems as well as for other municipal infrastructure projects. The project is being rolled out to other vodokanals in Ukraine, using a group of Ukrainian water professionals trained under the Lviv projects.

LESSONS LEARNED/ISSUES RAISED:
The broad lessons learned in the Lviv Vodokanal case relate to issues of the reform catalyst, targeting of USAID assistance, and the sequencing of reforms.

Catalyst
In this case, the catalyst for reform was the crisis in service and financing at the vodokanal. This crisis was brought on by the overall fiscal and economic crisis in Ukraine, which had led to the *defacto* decentralization of the water/wastewater system. While decentralization happened by default, it was consistent with USAID's interest in government decentralization and increased local government responsibility for municipal services.

The crisis at the vodokanal forced the utility and the municipality to develop restructuring plans, and to look for external sources of financing. In order to attract outside investment, they were forced to address the difficult issues of institutional reform in the sector and at the municipal level.

Targeting of USAID Assistance
USAID adopted a regional approach for addressing water/wastewater improvements and sector reform. USAID determined that in large countries such as Ukraine, and given the effective collapse of central institutions, a regional approach would be more effective, especially for local

services. However, the municipality and the local utility were unprepared for the type of deep structural reform necessary to extricate the vodokanal from crisis, and thus required intensive assistance in the form of both technical assistance and demonstration projects.

The large amount of resources spent in time and money raise the question of how to work cost-effectively in multiple localities. Vodokanals have a similar setup throughout the NIS, and thus USAID programs have the potential for a high degree of replicability, but is it financially feasible to roll out this type of project? It will be important to assess how the demonstration/roll out concept is working in Ukraine.

The other issue raised by targeting assistance at the municipal level, is the question of whether it is easier and/or more effective to deal with many local governments than with the central government. The Ukrainian example suggests that in large countries, where the commitment and capability to reform at the central level is questionable, a regional approach is a viable option, and especially for local services.

Sequencing

The peculiarities of the historical organizational structure of the vodokanal system, together with Soviet statutory accounting, make privatization and private sources of financing difficult options for the vodokanals (and other municipal utilities). For example, basic accounting consistent with international standards (which is completely lacking) is needed not only to determine if the utility company is credit-worthy, but also to help determine a fair rate structure for the services. In Ukraine the decision has been made to develop this institutional capacity within the framework of municipally owned utility companies. The question is whether rapid privatization (through management contracts) is a viable, or better, option.

V. LESSONS LEARNED FROM CASE STUDIES

This section attempts to place the lessons learned in a framework which can be used for thinking through past and future USAID interventions in infrastructure. This section explores broad lessons learned, rather than the more process oriented lessons learned (such as length and flexibility of contracts, continuity of contractors), which are addressed in the in-depth case studies attached in the appendix. The lessons learned bring us back to the issues of how far the paradigm of competition and private investment can be carried, and what is the role of USAID in moving the process forward.

Lessons have been derived from the cases in response to the following key questions:

1. Catalysts of Reform: What/Who precipitates reform?
2. Sequence of Reforms: What are the implications of the order in which the principal aspects and phases of reform are carried out?
3. USAID Role: Where/How has USAID assistance been most effective?
4. Roles of Government and Private Sector: How far can the government be pushed out of infrastructure and replaced by the private sector?
5. Impact of Reform: Have reforms achieved their expected objectives, and to what extent is there a measurable improvement in service? Have social equity objectives been achieved?
6. Challenges in Infrastructure Reform: What are some of the common challenges faced by countries undergoing reform, and what are the implications?

A. Lesson #1: The Role Of Crisis As A Catalyst To Reform

Resistance to change is always strong, and this has proven particularly true in the reform of infrastructure sectors. One of the insights sought from the case studies is the question of what factors are necessary to overcome this resistance and galvanize reform. Two prevailing types of catalyst were identified:

- Crisis
  - Fiscal Crisis
  - Industry Crisis
  - Decentralization
- Government Vision for Economic Growth

1. Crisis:

Fiscal Crisis

Fiscal crisis often leads governments to sell off state assets in order to raise revenues and cut the drain of state owned enterprises from the budget. Malawi rail is a good example of a country with serious fiscal difficulties which forced the government to look for new solutions to the problems in its strategically important railroads. The government of Malawi needed not only donor resources, but also alternative sources of finance for the railways. In fact, USAID structured its assistance to leverage budgetary support in return for agreements to reform the rail sector and thus attract private capital.

Industry Crisis:

Industry or sector crisis often results in lack of service, such as power outages or shortened hours of water services. Crisis in service frequently leads governments to commercialize, privatize, and/or liberalize in order to restructure and attract new sources of financing.

The power sector cases included in this project present a good example of the effects of crisis on stimulating reform. Brownouts in Central American countries and in the Philippines forced governments to turn to the private sector through liberalization, stimulating competition, and privatization, in order to increase capacity and improve operational efficiency.

Decentralization

Decentralization occurs when the national government devolves organizational and fiscal responsibility from the center to the municipalities. In many countries undergoing decentralization, local governments are often unprepared to manage and finance infrastructure services, and this fact leads to heightened crisis. On the other hand, being closer to constituents, many local governments are more anxious than the central government to rapidly improve service, and are thus ready to explore new solutions.

The Ukraine municipal water case (Lviv Vodokanal), in the western region of Lviv, is a prime example of the interplay between decentralization and infrastructure reform. When Ukraine was still a republic of the Soviet Union, all design, construction, and planning of infrastructure projects were controlled by Moscow. Local municipalities were responsible only for operating the utilities. When Ukraine gained its independence, the capital city of Kyiv continued planning from the center. But as the economy collapsed, and the Ukrainian national government found itself no longer able to finance capital repair and investments, responsibility for water and wastewater devolved by default to the local level.

Decentralization in Ukraine occurred without guidance or support to the regions. Lack of management, know-how, and financial resources for the water/wastewater system, combined with a decade of neglect by the Soviet Union, brought the Lviv water system to a deplorable state in which it supplied water only 6 hours per day. The crisis situation, combined with the local administration's understanding that it was forced to take responsibility, led the city authorities and the utility to team up and work towards sustainable reform.

2. Vision for Economic Growth

A government vision for economic growth often entails a focus on improving specific infrastructure sectors as a core strategy for increasing competitiveness, alleviating constraints to investment, and thus achieving economic growth objectives. These systematic and strategic plans, often involving public/private sector cooperation, may arise out of a broad economic crisis, or in a few cases be the result of truly visionary leaders.

The southern African island, Mauritius, provides a good example of a country in a non-crisis environment, which developed a clear strategic vision for enhancing competitiveness and economic growth based in large part on a world class telecommunications infrastructure. A member country of the Southern African Development Community (SADC), Mauritius is striving to become an offshore commercial financial center, while also continuing to build on its export assembly industries. To accomplish this goal, the country requires a strong and reliable telecommunications infrastructure. The government developed a policy paper on telecom reform and then a plan for restructuring the sector, and has been moving ahead with gradual but systematic reforms. Because the sector has been operating adequately (a non-crisis environment) Mauritius has been able to commercialize the state owned entity while moving slowly on privatization.

As outlined above, crisis seems to be the most common factor affecting or promoting the political will to reform. Planned reform, in the absence of a crisis, seems to be the exception to the rule. The lesson learned from these examples of different reform catalysts is that USAID reform initiatives may be most effective, or at least have the greatest impact, when linked to a crisis that focuses counterpart government attention and helps create a situation where the political pain of reform is less than the cost of inaction. In some cases, USAID is able to help precipitate awareness of the crisis and clearly establish the case for infrastructure reform as part of the solution to the crisis.

B. Lesson #2: Sequencing Of Reform Initiatives

Another issue examined in this study was the importance of sequencing to the progress and outcome of infrastructure reforms. Three discrete phases were identified which could be carried out simultaneously or sequentially:

- Commercialization
- Liberalization
- Privatization

The case studies show a variety of reform paths. Instances in which commercialization or liberalization were implemented prior to privatization are briefly outlined below.

1. Commercialization As First Phase

In the case of Malawi Rail, a fairly lengthy commercialization phase was undertaken prior to the concessioning of MR (1994). The impact of this commercialization is questionable, raising the issue of the benefit of pre-privatization restructuring. Some officials believed that it would have been best to skip the commercialization phase and privatize immediately, arguing that it did not make sense to spend valuable resources on commercialization and restructuring only to sell MR (1994) at a later point.

Mauritius, on the other hand, is a fairly unique case of a country able to improve efficiency in a commercialization phase prior to privatization, all the while moving ahead

steadily with reform mainly on its own initiative. However, the case can be made that had Mauritius bypassed the commercialization phase and gone straight into complete liberalization and privatization, telecom sector expansion and efficiency would be further ahead today.

2. Liberalization As First Phase

In the case of the Philippines power sector, the model adopted to deal with the immediate crisis focused on liberalization, attracting private investment in new capacity through Independent Power Producers (IPPs), thus opening the sector to private participation alongside the state-owned and run NPC. Privatization is slated to take place in the future. The liberalization phase has been lengthy, and has not benefited from consistent, strong regulation. Resulting high power prices raise the issue of whether privatizing NPC generation prior to/or simultaneously with bringing in IPPs could have improved the pace and impact of power sector reform.

El Salvador challenged the conventional sequence of reforms in the telecom sector, which called for privatization of a monopoly operator prior to liberalization/competition. El Salvador skipped a protracted commercialization phase and opened the market to competition under the regulation of a strong, independent authority. Fears that a competitive industry structure would reduce private sector interest proved unfounded, as the partial privatization of the two companies emerging from ANTEL indicated a high level of private sector interest.

Guatemala also opened its telecom sector to competition prior to privatization of Telgua. Costa Rica has gone a different route, opening the telecom sector to competition, but leaving the question of privatization aside.

In the case of Philippines telecom, the pre-reform industry structure was private, and thus the main reform that could take place was liberalization of the telecom market with the introduction of competition. The striking results in terms of improved service suggest that competition is more important than private ownership. Private monopolies do not necessarily function better than state monopolies. As in the Philippine power sector, leveling the playing field through regulation is a crucial element of reform.

The overall implication is that there is not one ideal sequence for phasing the reform process. The sequence implemented will depend on the reform catalyst (crisis might spur a more radical approach), the political environment, the type of infrastructure and the condition/quality of the infrastructure involved.

C. Lesson #3: Focusing The Role Of USAID

USAID has intervened in the support of infrastructure reform under a variety of circumstances and through a variety of programs. A third issue explored in this study was the question of when USAID assistance has been most effective. From the case studies, four key variables affecting the impact of USAID assistance have been identified, and are described below:

- Timing
- Target Group
- Focus
- Leveraging

1. Timing

USAID has initiated assistance at different points in the reform process. In the case of telecom reform in Central America, for example, USAID became involved earlier in the process in Costa Rica than in Guatemala and El Salvador, and utilized more resources, but results have been slower to materialize. This suggests that USAID assistance can have the most immediate impact when timed to coincide with a crisis and ensuing host country receptivity to new ideas and solutions.

However, the case of Malawi Rail presents a different dimension to this conclusion: Malawi Rail was in a crisis situation when USAID began the restructuring program, but nonetheless the restructuring program has been both resource and time intensive. This finding would suggest that timing of USAID assistance can play a role in determining its effectiveness, but that timing is not the only factor in the equation.

2. Target Group

USAID support for local, private, advocacy groups has been very effective in building constituencies for reform. The importance of advocacy groups is evident in a number of the telecom reform case studies in Central America. By promoting local advocates for reform in Guatemala, USAID assistance for telecom reform has been time and cost-effective.

In Costa Rica, however, USAID has worked with a local advocacy group but reforms in the telecom sector have moved much more slowly and with a less "liberal" end goal. The contrast in reform paths and pace suggests that factors need to come together in combination in order to have the maximum impact on the course and pace of reforms. The telecom sector in Costa Rica was functioning adequately, and reforms thus seen as less urgent than in Guatemala where teledensity was low, the monopoly operator debt-ridden, and public opinion on service negative.

3. Focus

USAID has provided different types of assistance, from capital project financing to technical assistance on policy formulation, to technical assistance on sector restructuring and transactions. The order of magnitude of the assistance has varied greatly. The case studies point to the fact that modest, but highly focused, initiatives, in the form of introduction of new concepts, and assistance in solving policy and regulatory bottlenecks can produce major results. Some of the Central America telecom cases indicate measurably dramatic results in terms of leveraging improved service and/or lower rates at the utilities, as well as the inflow of private capital.

4. Leveraging

In most of the case studies included in this report, USAID efforts have focused on leveraging private sector investment, resources from multilateral development banks, and government competition. Leveraging investment has proved a successful use of USAID resources, and has the potential for a much larger impact than assistance from USAID in isolation. For example, in Egypt, once USAID reoriented its assistance to give greater emphasis to the policy framework, private investment was leveraged in addition to the direct capital investments USAID had been making in the state telephone company.

The lesson learned about USAID intervention, is that it can be effective when provided in accordance with any of these variables, but seemed to be most effective when all four factors come together.

D. Lesson #4: Refining The Role Of Government And Increasing The Private Sector Role

The trend in infrastructure reform has been towards removing the state from ownership and operation and replacing it with the private sector, and focusing government on policy and regulation. One of the issues examined in this study has been to what extent the government can transfer to the private sector responsibility for ownership and operation of all types of infrastructure before social equity and consumer interests are sacrificed. The case studies suggest that while the possibilities for private sector involvement are constantly expanding, the government role is, to a large extent, determined by the characteristics of the type of infrastructure in question.

1. Power and Telecom Sectors

In the power and telecom sectors, the government role can be more easily limited to policy formulation and regulatory oversight. The key facilitating factors are:

- Technology, which greatly enhances the opportunity for competition (for example, cellular versus fixed line, in the case of telecoms) while also lowering the barriers to entry;
- Attractive profit potential, which can be used as leverage for ensuring investment by the private sector in new capacity and service for poor and rural areas;
- High degree of interest in investment on the part of the private sector.

2. Rail and Municipal Water Sectors

In the rail and municipal water sector cases included in this study, it was seen that the private sector can be attracted to manage operations, but that ownership of assets was left with the government. In cases such as these, factors which complicate the sale of government assets include:

- Limited technological options, requiring continuation of the “natural” monopoly. For example, no substitute technology to pipes exists to deliver water efficiently to urban areas. The question is then whether a regulated private monopoly will perform better than a state one.

- Lumpy assets, which are expensive to own and maintain relative to the potential returns discourage private purchases of the assets. Concessions and management contracts emerge as options.

These factors hearken back to the discussion earlier in this report on the perception of infrastructure as a public or private good. In the case of rail and water services, if the various components are viewed individually, it is possible to involve the private sector in discrete activities. For example, in the case of railways, one can distinguish between the rail bed, the rail cars, passenger service, freight service, sleeper and catering services, each of which can be owned and/or operated by separate entities. This separation of operational activities allows for more flexible ownership structures, flexible financing options, and competitive services.

3. Impact of Decentralization on Sector Structure

In cases where decentralization has taken/is taking place, the issue is raised as to whether the local government is capable of owning or managing the municipal infrastructure. The Lviv vodokanal (municipal water/wastewater) case demonstrates that the municipality was unable to operate and finance the water utility, and is being forced to corporatize the utility in order to obtain financing. However, creating a company and eventually contracting out management involves charging fees for service. The problem is getting governments and the population to accept this, especially where water has been essentially "free."

The lesson on government versus private sector involvement is that it is possible to bring the private sector into all types of infrastructure. However, some types, such as railroads or municipal water services are more complex, and require more creativity for leveraging private sector financial and management resources. In all cases, effective regulation by government remains one of the most crucial, and difficult to implement, aspects of the reform process.

E. Lesson #5: Examining The Impact Of Reform

Policy makers often are reluctant to restructure or reform infrastructure sectors, for fear that a more open and/or privately owned sector will fail to address the needs of rural and poor segments of the population. In some cases, there is also concern that the sector will be unable to attract sufficient private interest and that the government will be forced to continue in its financial and managerial support role. Reform plans usually promise increased investment and therefore increased capacity, rationalized tariffs, and improved service. One of the issues examined in this project has been the question of whether reform efforts have demonstrated the results promised at the outset. Most reform initiatives included in the case studies are fairly recent, but the results achieved are dramatic, and in some cases surprisingly so, as outlined below.

1. Private Sector Investment

The private sector has demonstrated enthusiasm and readiness to participate in most infrastructure sectors in the countries included in the case studies. Privatization proceeds exceeded expectations in a number of the Central America telecom and power cases,

demonstrating the level of interest by the private sector, even in a competitive and relatively small market. Given a suitable investment climate, the private sector proved ready to get involved.

In a number of the case studies, government regulation combined with private sector capability to produce dramatic and rapid increases in capacity. The Philippines telecom and power sectors provide such examples. In the telecom sector, for instance, the government mandated installation of new lines as a condition of receiving a "franchise," and close to half of the carriers have over-fulfilled their line commitments.

2. Tariffs

Reforms have usually included rate rebalancing, in order to remove the webs of subsidization and cross-subsidization. This means, in many cases, that rates for local telecom or rail service, or rates for residential electricity or water service have increased to reflect costs. At the same time, international long distance telephone rates, or commercial customer electricity rates have decreased. In some cases, all rates have decreased or at least remained the same. Competition is important as is getting the incentive structure right in the regulatory environment.

3. Service to Rural and Poor Segments of Population

Private power distribution companies, water utilities, or telephone companies are unlikely to serve rural and/or poor communities without adequate financial incentives or regulatory commitments. However, an independent regulatory body with sufficient strength and capacity to create incentives and enforce regulations can ensure that all communities have access to the benefits of improved infrastructure.

The lesson learned on the impact of reform, is that there is sufficient private sector interest in infrastructure to allow for greatly increased participation, but that private participation alone is not enough to ensure successful reform outcomes. The private sector must be paired with regulation and government oversight, in order for the benefits of reform to occur as desired.

F. Lesson #6: Common Challenges In Implementing Infrastructure Reform

From the case studies included in this report, it appears that countries implementing reforms in various infrastructure sectors are dealing with a number of common challenges. Most of these ultimately have to do with regulatory issues:

- Developing regulatory capacity;
- Enforcement of regulation: enforcing access, interconnection to fixed capacity;
- Ensuring rural electrification, telecom, transport, etc.;
- Designing and maintaining regional cooperation (power pooling, standard regulation, joint inspections).

1. Developing Regulatory Capacity

Once countries create a regulatory agency, the staff employed needs to be trained on good regulatory practices. In many of the countries involved in the case studies,

identifying and training competent local professionals has been difficult and time consuming. In many of the cases USAID has had to become directly involved in building capacity at the regulatory agencies.

2. Enforcing Regulation

In many of the cases, although a regulatory agency had been created, and although regulations had been passed, there was poor enforcement. Consistent regulatory enforcement is highly dependent on having an independent regulatory body, not subject to pressures from government or private interest groups. Enforcement is also enhanced by a well trained regulatory staff. The case of telecommunications in the Philippines stands out: multiple players were allowed in the market, a law was passed mandating interconnection, but the interconnection was not enforced. As a result, the reform had great potential, but impact was lessened.

3. Provision of Rural Services

In most countries, it is easier and more profitable to expand and improve infrastructure services in urban areas. Additional attention needs to be paid to encompassing rural communities (and poorer sections of cities), and making sure that they also benefit from power, telecom, and other infrastructure reform programs. Again, stimulus can be provided for the provision of services to poorer and/or remote areas, through incentives, regulation, and promotion of competition and new technologies.

4. Regional Cooperation

Most of the countries included in the case studies were involved in, or would benefit from, regional cooperation. Central American countries participate in regional power pooling, Malawi cooperates with its neighbor Mozambique on running the Nacala corridor and the two countries now conduct joint inspections, Mauritius participates in SATCC (Southern African Transport and Communications Commission) which is promoting regional cooperation in regulatory practices.

Experience demonstrates that regulation and enforcement pose common problems to all countries reforming and restructuring their infrastructure sectors. This would suggest that USAID has an opportunity to develop replicable programs that can be easily modified for particular circumstances. For example, USAID can (and already does) help promote cooperation through the organization of regional seminars, sharing of experience, assistance with development of materials. A prime example of where USAID is actively working on developing regional cooperation in an infrastructure sector is the Regional Telecommunications Restructuring (RTR) program in Southern Africa. USAID can expand the reaches of this experience by sharing its experience with partner firms involved in infrastructure reform.

The lesson learned is that USAID, or other donors, need to stay involved after the policy formulation and restructuring/privatization phases, and ensure that an effective regulatory/administrative capability is put in place.